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FINANCIAL TIMES

ISSUED IN LONDON AND FRANKFURT

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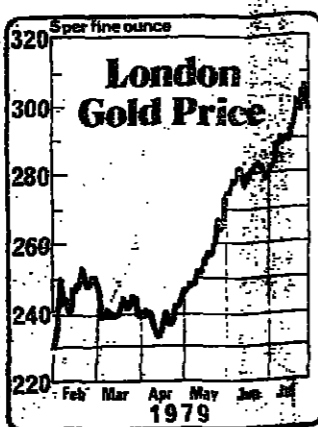
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FLAKE & MODULAR IRON CASTINGS THE INTERNATIONAL MAELHARITE METAL CO. LTD.

NEWS SUMMARY

GENERAL Dan-Air aircraft in sea: 30 saved BUSINESS Equities up 3.2; Gold falls \$2 1/2

Thirty of the 49 people aboard survived when a twin-engined Dan-Air aircraft on charter to Shell crashed into the sea on take-off from Sumburgh Airport, Shetland.



Councils must cut £600m more The Government told local authorities to cut planned current spending in 1980-81 by over £600m.

Thatcher talks The Prime Minister began delicate informal talks in Lusaka with key African leaders before Friday's Commonwealth conference.

Crash ruling A chain of 'unfortunate events' led to the head-on collision of two trains near Leeds in 1977, killing both drivers.

Ulster killing A plain clothes policeman, George Walsh, 50, was shot dead as he waited in an unmarked car outside a courthouse in Armagh, Northern Ireland.

Scientist wins Atomic scientist Sir Rudolf Peierls was awarded substantial fees for damages in the High Court over allegations in a book by Richard Dearlove that he was suspected of being a Russian spy.

Briefly... Detectives from four U.S. states questioned a man who claims to have killed 20 people since being freed from prison 18 months ago.

Chrysler record 3-month loss THE U.S. Treasury was driven yesterday to express concern about the outlook for Chrysler Corporation after the struggling motor company reported a second quarter loss of \$207.1m.

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All BP interests in Nigeria to be nationalised today

Nigeria is to nationalise all British Petroleum interests in the country from today in retaliation for BP's decision to sell crude oil to South Africa.

CBI forecasts industrial decline in coming year

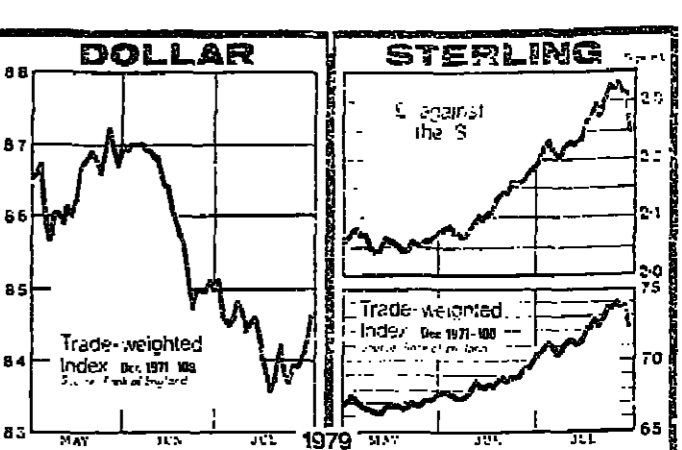
A GRADUAL decline in industrial activity over the next year was forecast yesterday by the Confederation of British Industry.

UK oil output adequate for month

BRITAIN APPEARS to have become self-sufficient in oil for the first time, if only for one month.

Spending up

Britain's spending on energy reached a record £17bn last year, about £1bn more than in 1977.



Sterling falls cancels gains of fortnight

STERLING dropped sharply against all major currencies yesterday, ending the almost unbroken daily rise in the seven weeks since the Budget.

Pressure

After the initial drop a lot of the pressure reflected hurried closing of speculative positions in favour of sterling and against the dollar.

Table with 2 columns: RISES and FALLS, listing various commodities and their price changes.

Chrysler record 3-month loss

THE U.S. Treasury was driven yesterday to express concern about the outlook for Chrysler Corporation after the struggling motor company reported a second quarter loss of \$207.1m.

Table of Contents listing various articles and their page numbers.

Advertisement for Healey & Baker, featuring a globe and text about international real estate services.

Soviet raps officials over mine deaths

By David Satter in Moscow... THREE MANAGERS of the Dzhezkazgan coppermines in Soviet Kazakhstan were reprimanded and other mine officials were tried and sentenced in connection with violations of safety regulations that led to the accidental deaths of three miners...

I.F.O. WARNS AGAINST RESTRICTIVE POLICIES

Germany faces slower 1980 growth

BY ROGER BOYES IN BONN

WEST GERMANY, digesting the effects of the oil crisis, faces the prospect of much slower growth and higher unemployment in 1980, although inflation may fall slightly, according to the latest report from I.F.O., the Munich-based research institute...

Sharp rise in Belgian inflation expected

By Giles Merritt in Brussels

A DANGEROUS surge in Belgium's inflation rate, carrying the threat of a cut in the country's vital export trade, has been disclosed in the Belgian Government's proposed 1980 Budget...



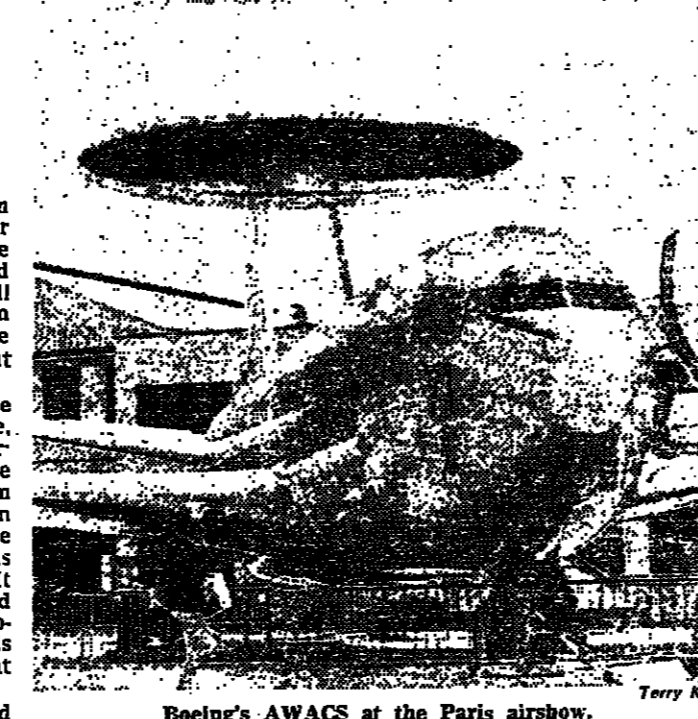
DR. SHAHPOOR BAKHTIAR, the Shah of Iran's last Prime Minister (pictured above), whose whereabouts have been a mystery since he fled from his country last February, has reappeared in Paris, where he gave a surprise press conference yesterday...

to allow the Iranian people to choose freely between a monarchy and a republican government. He painted a catastrophic picture of the present situation in his country...

Widespread discontent over NATO radar deal

BY OUR BONN STAFF

THE West German opposition has threatened that it will try to block funds set aside for the purchase of the controversial Boeing AWACS early warning radar aircraft unless Washington speeds up its offer orders with German industry...



Boeing's AWACS at the Paris airshow.

The offer deal played an important part in persuading the Germans to take on its DM 1.18bn share of the AWACS project. However, doubts persist, especially about the overall costs, including spares, training, support and operation.

Iran to hold crisis talks on economy

BY ANDREW WHITLEY IN TEHRAN

WITH THE Iranian domestic economy still struggling nearly six months after the revolution, a top-level crisis conference is to be held in Tehran next week. Organized by Mr. Mohammad Ali Mowlavi, the governor of the Central Bank...

as saying that while Iran wanted to settle all outstanding financial obligations in toto, the consortium was insisting on a piecemeal approach. The 14-member consortium, led by BP, produced the bulk of Iran's crude oil for more than 20 years up to last December...

Big drop likely in Italy's current account surplus

BY PAUL BETTS IN ROME

THERE ARE signs that Italy's substantial current account payments surplus could shortly come under pressure as a result of rising oil prices and a deterioration in the terms of trade...

Spain adopts 1980s energy plan

BY DAVID GARDNER IN MADRID

THE SPANISH Parliament has at last approved the National Energy Plan for 1977-87, after more than a year's hesitation over nuclear power. By a 40-vote majority in the Cortes, the Government has approved seven new nuclear power plants...

and fiscal incentives, energy saving, research into new forms of energy, and exploration for energy-producing raw materials particularly uranium. The plan also provides for the rebuilding of strategic stocks of oil and derivatives, coal and uranium. Oil stocks in particular were badly depleted in the wake of the Iranian revolution...

Terry Dodsworth reports on the prospects of success for Usinor and Sacilor Unions yield: now it is up to management

THE FRENCH steel-making unions finally have accepted the draconian Government-backed plans for restructuring the industry. Their decision, sweetened by big redundancy payments which will knock a hole in the French Government's budget provisions...

closed with the Government's re-financing package for the industry. The second is at least half-surrendered, following the unions' agreement on the two-year redundancy plan. The rest will have to be taken as the investment plan gets under way.

Some analysts consider that the Government should have gone the whole hog and merged Usinor and Sacilor, but the existing pattern of production presents a fairly rational solution to the problems of manufacturing economies.

These constraints forced on the project by the Government of the slump have undermined the profitability of Fos. Nevertheless, it is now believed to be running on the right side of break-even.

question may come during the next few months. The French special steels industry, which is an output of about 3.5m tonnes a year, is at present going through a period of agonising reappraisal which may lead to the absorption of some of its facilities into the bulk producers.

Egypt denies violation of peace agreement

BY DAVID LENNON IN TEL AVIV

THE Egyptian Defence Minister, General Kamal Hassan Ali, denied here yesterday that his country had violated the peace agreement with Israel by maintaining a military presence at the El Arish airfield in Sinai.

ment on all military issues during their three days of talks. This included the need to arrange for some form of United Nations of international force to police the buffer zones in Sinai.

Syria denies Iraq move

BY OUR FOREIGN STAFF

PRESIDENT Hafez Assad of Syria has said two senior members of his Government to Baghdad, the Iraqi capital, said continuing speculation that elements of the Syrian Government were involved with the reported conspiracy in Iraq.

telephone with his Iraqi opposite number and to have sent Mr. Abdul Halim Khaddam, the Foreign Minister, and Major General Hikmat Chehab, the chief of staff to Baghdad, according to Arab diplomats in Beirut.





UK NEWS

Staff cuts may hit savings, bonds

BY SAMONN FINGLETON

ONE OF the main services of the Department of National Savings may have to be phased out...

one of three major areas which might be affected. The other areas were the ordinary account at the National Savings Bank and National Savings Certificates.

The Department said that Mr. Nigel Lawson, Financial Secretary to the Treasury, had explained the implications of the proposed cuts to staff representatives last week...

Mr. Lawson had said that only one of these areas would be affected if the Government was to achieve a cut of 10 per cent in staff spending by April, 1982.

Bank sets new rules for money dealers

BY JAMES BARTHOLOMEW

THE BANK of England issued a code of conduct for principals and brokers in the £300m sterling money market yesterday...

only to a lender who seriously intends to deal. A principal shall not apply unfair pressure on a broker to pass on information improperly.

Mirror Group chairman to retire at end of year

BY JOHN LLOYD

MR. PERCY ROBERTS, 59, chairman and chief executive of Mirror Group Newspapers, is to retire at the end of the year...

the Mirror group from today. Mr. Tony Miles, editorial director of the Mirror group, becomes chairman, and Mr. Douglas Long, deputy chief executive, becomes chief executive.

Record sales for main London auction houses

THE FOUR main London auction houses had record sales for the closing season, with combined net figures of £339.6m against £282.9m in 1977-78...

campaign by a major auctioneer in the UK. Bonham's rise was 15 per cent on a turnover of £8.6m, compared with £7.5m last year.

SALEROOM

BY PAMELA JUDGE

based on exchange rates taken at August 31, while this year's were struck on July 30. Without this difference the total sales would have been more than £197m, a gain of 32 per cent.

On July 3-5 in London, a sale of Impressionist and Modern paintings, drawings and sculptures made £8.7m. The Paul Rosenberg collection made £3.2m on July 3 and Picasso's 'La Bouffelle de Vin' was sold for a record £460,000.

More fraud officers considered

By John Elliott, Industrial Editor

THE DEPARTMENT of Employment is considering increasing the number of fraud officers it employs in an attempt to cut down on the payment of unemployment benefit to people who have jobs.

This emerged yesterday after Mr. David Mitchell, a junior Industry Department Minister, told the Confederation of British Industry's small firms council that the Government was looking into what could be done in the case of people who were moonlighting and drawing unemployment pay at the same time.

At present the Employment Department employs 300 fraud officers. The cost of an increase would be covered out of £7m a year savings that the Department will make from September when it starts paying unemployment benefit fortnightly instead of weekly.

Eventually the Department hopes to more than cover the cost of the fraud officers by cutting down on the £1.5bn a year it spends on unemployment pay.

The Department is also aiming to curb abuses of unemployment and other benefits.

Trade report censures four

BY JOHN MOORE

DEPARTMENT of Trade Inspectors inquiring into the ownership and affairs of Ashbourne Investments, a small quoted company with financial and industrial interests, have censured the conduct of four individuals.

In addition, the investigation has disclosed a number of areas for which the present law and practice provide inadequate protection against abuse.

The details are in a Department of Trade report published yesterday after an investigation which lasted nearly four years.

The inspectors, led by Mr. Robin Auld, QC, say they are concerned about the lack of adequate safeguards for unsecured loan stockholders and the absence of clear standards in relation to 'window-dressing' of accounts.

The inspectors regarded as particularly serious the attitude of Mr. Simon Raynaud, an executive director of Ashbourne, to the breach of the loan stock trust deed of the company in the six months before a consortium gained control of Ashbourne.

They regard as serious the abuse by Mr. Stephen Barry, Mr. Stephen Ross and Mr. Lionel Casper of their management control of Ashbourne in relation to a share deal involving shares of Armour Trust.

bank acquired by Ashbourne in 1987. Mr. Stephen Barry is held primarily responsible for the 'window dressing' which he used to conceal the breach of the loan stock trust deed and the extent of Ashbourne's reliance on support from Schwab.

The report covers the period between 1973 and 1975 and the events surrounding a proposed bid by a consortium headed by Crest International Securities.

The founders of the consortium were Mr. Lionel Casper, the chairman of Crest, Mr. Stephen Barry, the chairman of Corporate, and Mr. Bernard Glazer, a rancher and property owner in South Africa.

Their intention was to gain management control of Ashbourne, merge it with their own companies and set out on a career of 'company conquest'.

By the end of November 1975 the consortium had acquired 23.26 per cent of the issued share capital of Ashbourne. It proposed a bid and instructed merchant bank William Brandt's, a member of the Grindlays Banking group, to act for it.

By then Mr. Casper and Mr. Barry had already stretched their respective companies' finances to obtain the stake. They sought board representation but it was denied.

holding to 43.15 per cent of Ashbourne, it then became bound under the City Code on Takeovers and Mergers to make within reasonable time an offer to buy the remaining shares in the company.

Ashbourne sold the shares to the consortium after an assurance given by William Brandt's that the consortium had sufficient funds available to meet its obligation.

In anticipation of the bid, four representatives of the consortium - Mr. Casper, Mr. Ross, Mr. Barry, and Mr. Brian Simmons - were appointed to the Ashbourne board.

No bid materialised. In their observations on the deal the inspectors say that one of the most important objects of the City Code is to ensure that all shareholders of a company about to be taken over receive equal treatment from the bidder. In this instance, all the shareholders of Ashbourne did not receive equal treatment.

The takeover panel was unable to enforce the City Code, first, because the consortium directors resorted to litigation to enable the consortium to evade its obligation to bid, and in the end, because the financial arrangements for the announced bid failed.

The inspectors observe that Mr. Philip Ralph, then a director and head of the corporate finance side of William Brandt's, was at fault in failing to construct a clear and comprehensive underwriting agree-

ment for the bid at the outset. The inspectors conclude that the consortium directors took steps to improve the liquidity of the Ashbourne group, principally by the realisation of some assets and by obtaining repayment of certain loans made by E. S. Schwab.

However, their brief stewardship of the company and subsequent control were highly damaging to it, notably by the costly disputes in which they involved the company in trying to retain control of it without complying with the obligation to bid for it.

They praised Mr. Raynaud and the company's fellow consortium directors for undertaking the management of the company affairs under such trying conditions.

\* Ashbourne Investments Limited, Department of Trade Report, HMSO, £3.75.

Store chain appoints executive

By Christine Mair

MR. GEORGE CANNON has been appointed chief executive of the wholesale division of International Stores, a subsidiary of BAT Industries. Two months ago he resigned from the Board of Pish Lovell after lengthy wrangles about major policy decisions.

He will resume responsibility for Alliance Wholesale Grocers, which came under his control in the late 1960s when he was chairman of the wholesale grocery arm of Associated British Foods. Last year K. Parry and Tongue, International's wholesale subsidiary, bought the Alliance chain from Associated.

Mr. Cannon becomes chairman of Alliance Wholesale Grocers, which was set up on the main International board, which has been under a restructuring since last year when the company announced a turnaround from a trading profit of £5.8m to a loss of £5.8m.

The main losses have been on the retail side and the company believes that Mr. Cannon's previous experience with Key Markets and Fine Fare will be useful.

Mr. Cannon's main areas of responsibility have always been wholesale buying and distribution, and here too International's performance has recently been poor.

New London courts open

TWO NEW courts have opened in Croydon to help clear the backlog of Crown Court cases in the London area.

A further 23 temporary courtrooms are scheduled to open before 1982 on the South Eastern circuit, where defendants in custody wait an average of more than 18 weeks for trial. Those on bail wait more than 31 weeks.

Stars on Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday. LONDON-KUWAIT, ABU DHABI, JEDDAH, DHAHRAN, DUBAI. Sit back and enjoy our daily TriStars to the Gulf. Especially the new TriStar 500. Fly the flag to the Gulf. It's the best programme every day of the week. British Airways. We'll take more care of you.

THE NORWEGIAN STATE AND MUNICIPAL POWER CONSORTIUM SIRA-KVINA KRAFTSELSKAP 7% Sterling/Deutsche Mark Bonds 1983

S. G. WARBURG & CO. LTD., announce that Bonds for the amount of £460,000 have been drawn in the presence of a Notary Public, for the redemption instalment due 1st September, 1979.

The numbers of the bonds so drawn are as follows:-

Table of bond numbers for £500 Bonds, listing serial numbers and their corresponding values.

Table of bond numbers for £100 Bonds, listing serial numbers and their corresponding values.

On 1st September, 1979 there will become due and payable upon each Bond drawn for redemption, the principal amount thereof together with accrued interest to said date at the office of:-

S. G. WARBURG & CO. LTD., 30, Gresham Street, London, EC2P 2EB., or one of the other paying agents named on the Bonds.

Interest will cease to accrue on the Bonds called for redemption on and after 1st September, 1979 and Bonds so presented for payment must have attached all coupons maturing subsequently to that date.

£1,860,000 nominal amount will remain outstanding after 1st September, 1979.

The following Bonds, drawn for redemption on dates stated below, have not yet been presented for payment.

Table of bond numbers for £500 Bonds, £100 Bonds, and £50 Bonds, listing serial numbers and their corresponding values.

30, Gresham Street, London, EC2P 2EB. 1st August, 1979

UK NEWS

Gulf plan to seek Channel oil

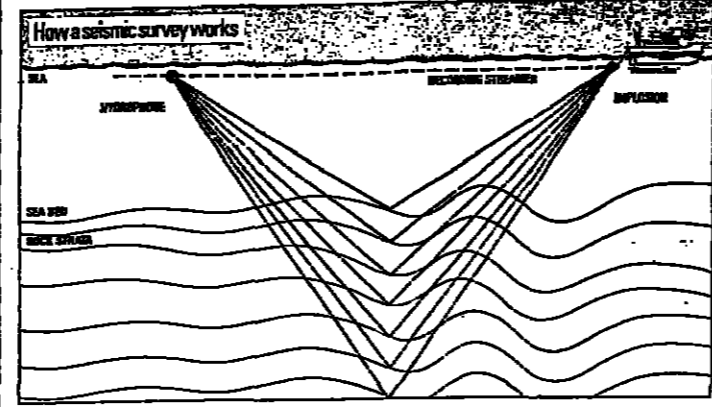
BY RAY DAFTER, ENERGY EDITOR

GULF OIL is to carry out a seabed survey of the English Channel to discover the area's oil and gas potential. The survey, on behalf of 16 groups of oil companies, is scheduled to start mid-September and will take about two months to complete.

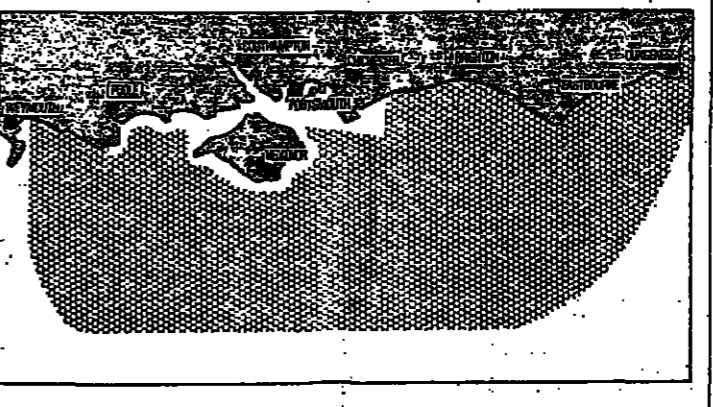
segment of the oil companies would benefit from the results there would be less need for individual surveys. This would help reduce disturbance to fishermen. The survey had been timed to avoid the high season for crab and lobster fishing, Gulf Oil said.

At present the central and southern platforms on Ninian - one of the biggest fields in the North Sea - are producing oil at the rate of 200,000 barrels a day. So far 25m barrels have been produced from Ninian since the field was brought on stream in December, 1978.

Partners in the Ninian consortium are: Chevron Petroleum (UK), British National Oil Corporation, Imperial Chemical Industries, British Petroleum Development, Ocean Exploration, Murphy Petroleum, Ranger Oil (UK), and London and Scottish Marine Oil.



The diagram on the left shows how a seismic survey can be conducted using gasguns. In the diagram on the right, the shaded area shows the section of the Channel between Dungeness and Weymouth which will be surveyed.



Attack on office waste

By James McDonald

THE COST of producing one letter in an office is £5, according to a survey conducted by the Alfred Marks employment bureau among more than 1,000 secretaries and clerks.

Mr. Bernard Marks, of Alfred Marks, said: "Too often a secretary is regarded as a status symbol by an employer and is not properly employed." About 75 per cent of survey participants claimed their time was not used effectively and that they had abilities untapped by their employers.

Sainsbury speeds up laser checkout tests

BY DAVID CHURCHILL, CONSUMER AFFAIRS CORRESPONDENT

THE SAINSBURY supermarket chain has decided to accelerate its testing programme for new laser-scanning electronic checkouts.

The Key Markets store will be using the specially developed IBM system and equipment. This system has also been used at Sainsbury's Crawley store experiment. Sainsbury said yesterday that "the initial reaction to this trial has demonstrated the acceptability of the system and the urgent need to progress towards scanning."

Wilson wins libel action over Daily Mail article

SIR HAROLD WILSON yesterday accepted appropriate damages in settlement of his High Court libel action over a newspaper article which suggested he had neglected his duties in the 1976-77 Parliament Session.

Mr. Harold Wilson, former Prime Minister, had been mentioned in name in the article, Mr. Geoffrey Shaw, his counsel, told Mr. Justice Gibson. The article suggested he had been neglecting his duties by not serving on Commons select and standing committees and being inactive in the Chamber.

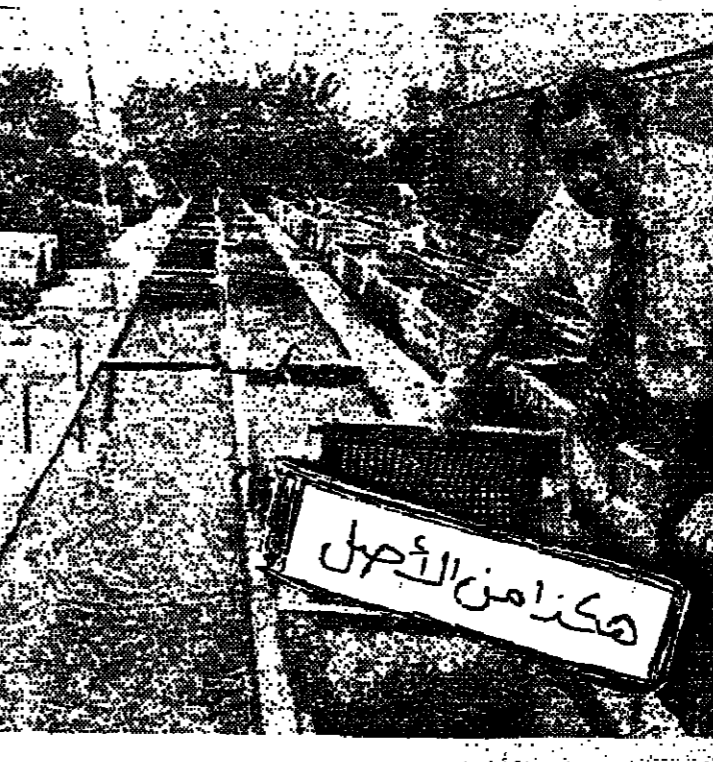
OTHER MEN'S JOBS: TROPICAL FISH IMPORTER Colour and money from foreign waters

MORIARTY IS not mean nor aggressive, but he does like to be master in his own house. He is a flamboyant lover. Like others of his ilk, he colours vividly when amorous - becomes luminous even. He dances before the object of his desire, seeking to entice her to his love-nest.

dusty leaders and managing director of Aquatic Nurseries, Hampton, Middlesex, says: "Breeding is easy, it's the growing that's the problem. You need ponds. And for ponds you need space. Ponds under glass are expensive."

The Europe-Far East trade is highly developed. In Singapore, some brokers buy direct from the commercial breeding ponds and ship to the waiting importers. This worries the purists who prefer fish to come from their natural habitat.

turned professional in 1971. Armed with £1,500 insurance money from a car crash, the same amount from a partner, and what he calls "a little help from the bank," he went into business in a back garden.



Mr. Malcolm Hardy tends open-air ornamental fish tanks.

Cheaper homes sought by buyers

BY MICHAEL CASSELL

FIRST-TIME house buyers now have to pay an average of £15,200 for their home, says Nationwide Building Society.

A survey by Nationwide, the country's third biggest society, shows that new owner occupiers are going for cheaper dwellings and thus paying about a third below that paid by existing home buyers.

First-time buyers are seeking older homes and more terraced houses in their search for the cheapest property.

At the bottom of the range, pre-1919 terraced houses now cost an average £11,920, although the society points out that there are considerable regional variations.

In Greater London, the most expensive region, the cheapest property category involves pre-1919 flats at an average price of £17,310.

In the East Midlands, the lowest priced region, the cheapest type is the pre-1919 terraced house selling for an average of £8,720.

About 50 per cent of first-time buyers were previously living with parents or relatives, while more than 25 per cent rented from a private landlord and 12 per cent were local authority tenants.

Mr. Lequard Williams, chief general manager of the Nationwide, said that in spite of the recent rise in house prices, about 45 per cent of his society's loans were going to first-time buyers.

They were not, therefore, being priced out of the market, but were turning to older, terraced homes because they were cheaper, usually conveniently situated for work and offered adequate space for a couple's first home.

New factory for clothing company

SCOTTISH CLOTHING company S. Meafow expects to increase its workforce by more than a third by moving into a new factory on the Queenslie industrial estate in Glasgow.

The building, leased from the Scottish Development Agency, will enable the company to centralise its cloth cutting in one plant. The expansion frees space at the two existing factories in Glasgow and Irvine, Ayrshire, for increased output of jeans and trousers.

Mr. Elliot Leviten, chief executive, said the company intended to expand production rapidly, creating 100 jobs at the new factory by the end of the year.

Continuing the new midweek series of articles on unusual jobs.

number of his offspring is uncertain, but runs into hundreds. Such virility, and Moriarty is only 12. But Moriarty will never find a place in the Guinness Book of Records. He is not Homo Sapiens but Pseudotropheus Tropheus, a Malawi Cichlid. He is, indeed, the first fish ever bought by Barry Myerscough, an hotelier and tropical fish breeder at Hebden Bridge, Yorkshire.

Moriarty is more of a family pet these days, but he remains at the centre of a business which is rare in the world of ornamental fish. Rare, because Mr. Myerscough breeds fish commercially as well as buying and distributing.

# Is this the right way to raise capital funds?

Some people will go to almost any lengths to try and raise capital funds.

But, when all's said and done, sheer determination will never be enough, on its own. What's needed is a sound reputation. And that reputation has to be established before you can expect to raise any kind of capital.

## Advertising builds reputations

Corporate advertising is one way of achieving that objective.

Intelligently used as a corporate communications vehicle, effective corporate advertising not only educates and informs, it also helps to develop - and confirm - ideas and attitudes among widely differing groups of people.

Far from hindering your company's relations with the financial community, it can only improve them. Now and in the future.

## Getting the right results

Recognising the value of corporate advertising is one thing. Getting it right is another.

It has to relate to your company. It has to relate to its audience. It demands a long-term commitment. And, obviously, it has to be done well.

Which is why we've produced a book to help you get it right.

## A guide to successful work

"Corporate Advertising: Menace, myth or magic formula?" not only discusses the importance of corporate advertising, it tells you how to go about it.

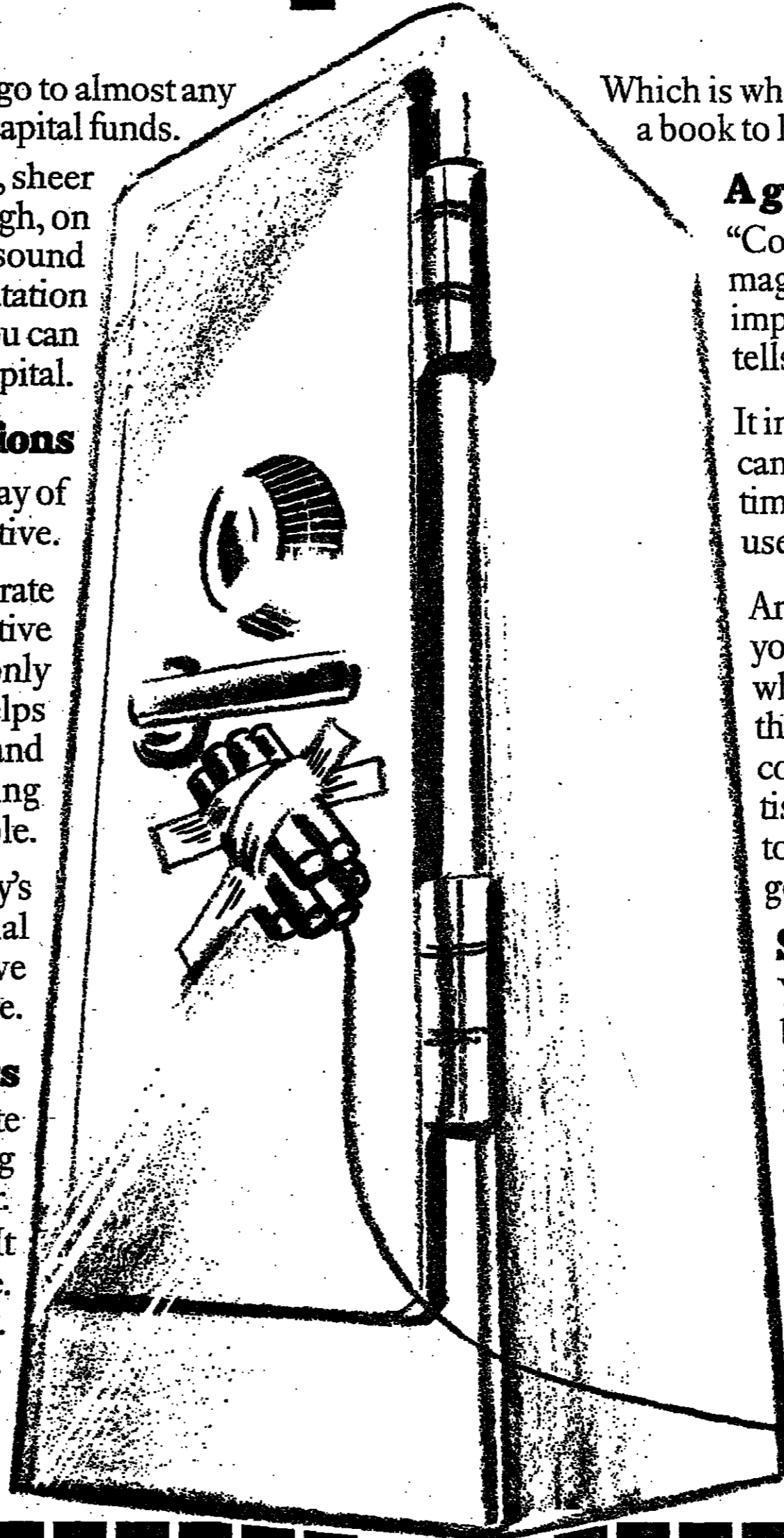
It includes examples of successful campaigns. It talks about strategy and timing. It discusses the media you can use to reach specific audiences.

And, most helpful of all, it provides you with a detailed checklist from which you can begin to identify all those occasions when your company could benefit from a corporate advertising campaign; such as when you want to raise investment capital, or seek the goodwill of the financial world.

## Send for your copy now

You can get a free copy of this new book simply by completing and returning the coupon below.

We can't guarantee that your advertising will improve your standing overnight. But what you'll learn from "Corporate Advertising: Menace, myth or magic formula?" will certainly alter your attitude towards reputation building.



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Financial Times, Bracken House,  
10 Cannon Street, London EC4P 4BY.

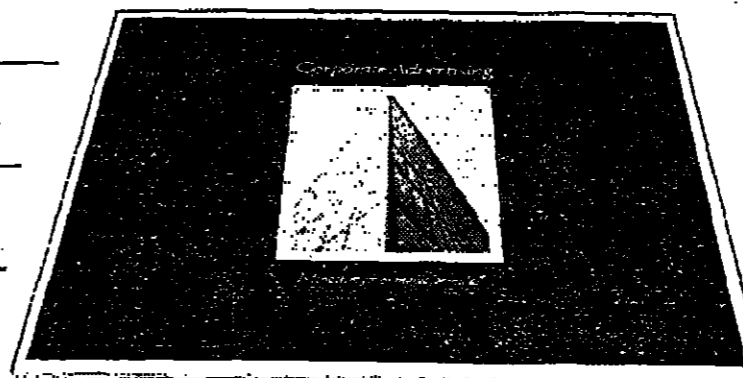
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Best ever investment from Northern Rock!

10.75% = 15.36%

NEW 5 YEAR EXTRA INCOME SHARES

Gross equivalent where basic rate income tax is paid at 30% A new share producing exceptionally high interest for the 5-year investor...

NIR Northern Rock It's everyone's Building Society.

Member of the Building Societies Association. Authorised for investment by Trustees. Branches and Agents throughout the U.K. Assets exceed £500 million.

CHIEF OFFICE: Northern Rock House, P.O. Box No. 2 Gosforth, Newcastle upon Tyne NE3 4PL. Tel. 0632 857191.

City of London Office: Stonehouse, 128/140 Bishopsgate, EC2M 4FX. (01 247 6861). Scottish Office: 27 Castle Street, Edinburgh EH2 3DN (031 226 3401).

Engineers claim partial success

BY ALAN PIKE, LABOUR CORRESPONDENT

THE Amalgamated Union of Engineering Workers claimed yesterday that some employers have already conceded in full the pay and conditions claim on which engineering workers throughout the country began industrial action this week.

"If it were not for the holiday period I would anticipate many more employers applying for dispensation," he said. The suggestion that companies were breaking ranks and settling was, however, rejected yesterday by Mr. Anthony Frodsham, director-general of the Engineering Employers Federation. He called upon Mr. Duffy to name companies.

Mr. Frodsham said that due to demands from employers he was issuing a solidarity call and had every reason to believe this was being followed. He was also asking member companies to explain to their employees the full facts of the dispute and was sure this would lead to them beginning to question the wisdom of the unions' leadership.

Mr. Tom Crispin, TGWU national secretary, said: "We are recommending that the action should take the form of area strikes on a geographical basis. But we would take account of the need to maintain essential services, such as hospitals." Areas would be hit on a daily or longer basis and by rotation.

Pilking ton stands firm on its offer

BY OUR LABOUR STAFF

PILKINGTON refused yesterday to improve its pay offer for 8,000 process workers to 24-hour strike by the workers is expected to go ahead next Tuesday.

Pilkington, the UK's largest flat glass manufacturer, said production would be halted during the strike at each of the sites where the General and Municipal Workers' Union, which represents the workforce, have warned of the possibility of an indefinite strike.

The company said it was disturbed that "contrary to custom" there would be no safety cover provided during the strike. Fire, ambulance and maintenance personnel would not be working.

The process workers rejected by three to one an overall offer of 15 per cent in a deal similar to that offered to craftsmen and white-collar staff. The proposed increase on basic rates of 11 to 12 per cent was unacceptable.

Pilkington argued that new shift rates fixed earlier this year, together with a new £4 productivity payment, would lift the total wage bill for process workers by 20 per cent.

Loyds judgment reserved

LORD DENNING, Master of the Rolls, has reserved judgment on a pension scheme test case of a bank's alleged contravention of the Equal Pay Act and Treaty of Rome.

Magistrates courts face clerical action

MAGISTRATES COURTS outside London may have to suspend their sittings because of selected industrial action by members of the Association of Magisterial Officers from today.

Blid to speed up tunnel traffic

AN EXPERIMENT on improving the traffic flow in the Blackwall Tunnel is to start on Monday, the Greater London Council said yesterday.

SE England industry plea

THERE IS a "vital" need for more industrial development in south-east England, says a South East Economic Planning Council report, which will be sent to the Industry Secretary.

More urged to join work scheme

THE MANPOWER Services Commission is to make a new effort to persuade more well-known companies to provide work experience for school leavers and the long-term unemployed.

Customs officers fight cuts

INDUSTRIAL action by customs officers which could affect air and sea travel will be announced today by a civil service union.

TV union given 15% pay offer

THE INDEPENDENT television companies have made a pay offer thought to be worth about 15 per cent to the Association of Cinema Technicians, Television and Allied Trades.

Times workers' decision will take at least two weeks

BY ALAN PIKE, LABOUR CORRESPONDENT

THE NATIONAL Society of Operative Printers, Graphical and Media Personnel is to circulate copies of the return-to-work proposals at Times Newspapers to its 2,500 members at the company before they vote on them.

Mr. Edward O'Brien, the union's national assistant secretary, said yesterday that a report that the proposals had already been rejected by leaders of the union's chapels (office sections) was "absolutely untrue." A decision on the formula would be taken by NATSOPA members and the heads of the large numbers involved, this could not be concluded in less than about 14 days.

The union wants all its Times Newspapers members, who along with other employees were dismissed after the company suspended publication last November, to see the proposed peace formula before they vote on it at chapel meetings.

Prior says reforms 'no threat to TUC'

MR. JAMES PRIOR, Employment Secretary, yesterday rejected the TUC claim that the proposed trade union laws were a "major incursion" into unions' rights.

Mr. Patrick Mayhew, junior Employment Minister, said in a speech in London yesterday that the Government was not "seeking confrontation" with the unions.

In his letter to the TUC, Mr. Prior said: "I am surprised the TUC general council should regard these proposals as other than 'limited' compared with the legislation on industrial relations carried by previous administrations of either party, and notably by the last Labour Government."

It was true — as the TUC stated — that the Government was reviewing trade union immunities, particularly over "secondary" action.

The proposals were part of a wider approach to "get the country moving again" with a "better balanced framework of legal rights and obligations within which unions can operate effectively and responsibly."

But they did not represent "a major incursion into basic trade union rights." They were intended to be directed at particular problems that needed to be remedied.

Mr. Geoffrey Holland, special programmes director, said that if unemployment rose towards 1.7-2m this year, the rate among school leavers could rise three times as fast. Though the numbers of school leavers unemployed was down at about 200,000, that figure disguised wide regional variations.

In Wales, Scotland and the North, for example, there were about 120,000 unemployed school leavers and only about 7,000 vacancies notified to the careers service.

chapters would present the peace formula, agreed between national union officials and management on Friday night, with its toughest tests.

Mr. O'Brien announcing that the formula would be circulated to all members, said that "any speculation or distortion of the situation could only be described as harmful and detrimental to the best interests of 2,500 NATSOPA members" at Times Newspapers.

Mr. Bill Miles, a national official of SOGAT, said yesterday that if there was a shortage of labour in any national newspaper office, including The Sun, the union was quite willing to talk to the management about an agreement to provide proper manning levels.

Mr. Colin Jeeves, president of the 4,500-strong association, said his members would take selective action, but no full-scale walk-out was planned.

There is also a promise of a reference to the Clegg Commission on comparability with the findings to be implemented in full by next January.

The settlement was due for agreement on July 1. A meeting of both sides at the Advisory Conciliation and Arbitration Service last Thursday failed to produce an agreement. Pay talks collapsed on July 20, and the local authorities say they cannot improve their offer. No further talks are planned.

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COMPANY NOTICES

U.S. \$1,000,000 ARAB INTERNATIONAL BANK FLOATINATE NOTES 1983. WEST RMD CONSOLIDATED. JARDINE TRUST INVESTMENT. NATIONAL COAL BOARD. S. G. WARRIOR & CO. JARDINE TRUST INVESTMENT. THE GREAT NORTHERN GRAPH COMPANY. AGENDA. 1. Report of the company's auditors...

LEGAL NOTICE

THE COMPANIES ACT 1968 NOTICE OF APPOINTMENT OF LIQUIDATOR. Name of Company: Vortel Limited. Address of Registered Office: 18, Boston Place, London, NW1 6HY.

RESIDENTIAL PROPERTY

Andro Milton & Co. BELGRAVIA. EATON ACE. Ideal Business Opportunity. EATON SQUARE. Penthouse with superb views over Chelsea. EATON PLACE. Beautifully appointed Ground Floor flat.

UNSPILT MEMORCA

Binbaca Torret. Low front line 2-bedroomed apartment in ideal situation overlooking the sea. BINBELLA. 36 Cornwall Gardens, Ldn, SW7. Tel: 01-837 4070.

CLUBS

EVERYONE has cut down the others because of a policy of fair play and value for money. 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

MANAGEMENT

The "spiral staircase" leading to Japan's top jobs

BY SANDRA SAMAN

SATOSHI OKUBO's appointment last year to the most important financial job at Honda Motor of Japan came after a lifetime with a single company.

Okubo's career progress through Honda, up to the position of managing director for finance, would be highly unusual in a Western company.

So well-established is this circuitous career route to the top that it is common to hear "spiral staircase" refer to the strictly linear Western metaphor, the ladder.

The job rotation system accounts for many of the strengths as well as the weaknesses of Japanese business.

The Japanese believe that the practice helps to create company men who have the interests of the entire organisation at heart rather than those of their individual departments.

likelihood of being either fired or hired elsewhere, he could easily succumb to complacency and boredom.

The danger is particularly acute among the Japanese, suggests Nobuo Kitajima, a Honda general manager who believes that his countrymen are short sprinters, not long-distance runners.

Other Westerners complain that the system breeds generalists at the expense of needed expertise.

Certainly the system depends upon a docile managerial group that unquestioningly accepts its role as a cog in the great corporate machine.

For the following 10 to 20 years, depending on the nature of the company, the graduates who entered together in the same "class" may well travel through the company step by step.

The scheme is based on the "kyoto," loosely translated as the deputy headmaster of a school.

In an average year it sends a select 15 or so employees abroad for a minimum of three months, at a cost per man of ¥2m.

Each group annually selects a subject relevant to IHI, such as overseas procurement or in-house engineering ability.

Through such groups the company hopes to achieve a more general outlook. It believes this attitude has become more important as IHI shifts from traditional line-and-staff management to project management.

While schemes such as the kyoto system constitute a more informal means of employee education, Japanese companies also invest heavily in formalised rotation programmes.

Even companies without such formalised rotation programmes still try to create generalist potential managers in Japan who are capable of appreciating jobs immediately after the company's overall graduation, the tradition of life terms.

Heavy Industries, the shipbuilder, steelmaker and machine tool manufacturer, has, since employment in 1973, operated an unusual West.

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Multinational approach to cutting costs

BY ERIC SHORT



THE PROVISION of life and other associated insurance benefits by multinational companies for their employees throughout the world is now an accepted feature in the overall remuneration package.

The additional cost arises on two counts, the first being from the restrictive practices imposed by authorities on their country's insurance industry.

In the UK, insurance companies are completely free from government control regarding the setting of premium rates, consequently life insurance rates are very competitive and companies buying life insurance generally get a good deal.

Rates set by legislation

In contrast, the premium rates for certain types of insurance business are fixed by legislation in a number of European countries.

The original object of this tariff system was to protect policyholders. But with improving mortality and historically high interest rates, insurance companies have been making substantial profits on life business which have not been returned to the policyholders.

The second additional cost arises because benefits of scale are not realised. The unit cost of buying life insurance falls with the increase in numbers of employees being insured.

However, a development in recent years where the operations of insurance companies in

different countries are combined now offers multinationals the opportunity to cut insurance costs. This co-operation is known as a multinational insurance management or a "network," the workings of which are explained in a booklet published by International Benefit Consultants, Metropolitan Pensions Association (International).

A multinational insurance arrangement is effectively an agreement between the insurance companies in the various countries which pool their insurance results in respect of a particular client.

The system works as follows: each insurance company exercises annually the profit made from a particular client from the insurance placed with it. This can arise from a variety of sources—death claims being less than expected, lower administration expenses than assumed, higher investment income than projected being among the main sources.

The profit is then rebated to a pool—known as an international dividend—and each company can usually receive this rebate in a particular currency.

A spin off from this set-up is that multinationals can effectively transfer funds from one country to another irrespective of the exchange control regulations that may be in force. The MPA booklet warns that the governments are aware of this implication in avoiding exchange control and that blocking legislation could well appear at some time.

Other, not insignificant, cost savings and benefits are also available to both the company and its employees through using a network. A company can, for example, get credit for its total number of employees worldwide. The insurance company

is prepared to cost the cover on the basis of the total number of employees, not just those employed in a particular country.

The higher the number of employees, the more relaxed are the underwriting arrangements. Thus an employee with poor health could get full cover whereas, in a smaller pool of employees his cover could have been restricted. For example, if he works in the UK where only 25 persons are employed the cover he could get without evidence of health is likely to be limited to £50,000, but if there are over 250 employees worldwide he could get up to £150,000 cover automatically.

Arranging network insurance can also simplify the transfer of benefits when employees are moved from one country to another. Full reserves can be transferred, underwriting will be on the same basis and, most important, the payment of pension can usually be made in one chosen currency. So, if a UK national dies before retirement while working in Holland, the pension to his widow and dependants can be paid in sterling.

Greater control

Finally, operating through a network enables the parent to maintain greater control over the basic structure of the group. After each review period usually a year—the network secretariat supplies the parent company with an account showing the financial transactions of each of the plans covered by the network. The local cost breakdown included in this account details premiums paid, the expenses charged and the local plan's contribution to the international dividend pool. The parent company can therefore have immediate access to details of all plans of operations covered by the network.

"A Study of Multinational Insurance Contracts in the context of Employee Benefits" from Metropolitan Pensions Association (International), Hermitage House, 28 Hermitage Road, London SW19 4SR (telephone 01-838 7411).

Technical News

EDITED BY ARTHUR BENNETT AND TED SCHOETERS

COMMUNICATIONS

Speeding the news to site

Siemens is offering this equipment to meet situations where availability at all times is essential such as in the operations of utilities, technical support offices and spare parts stores.

ASSEMBLY

Press for the new Mini

TWIN RAM hydraulic presses which will electronically check bearings and oil seals before assembling them into the front hubs of the new Austin Morris Mini Metro are being supplied by John Hounsell (Engineers), of Rowley Regis.

TEXTILES

High speed weaving

WITH textile machine building generally at over-capacity throughout the world, current news is of companies being established to make machines for completely new processes.

EXPORTERS! YOU NEED OUR INTENSIVE FRENCH COURSE!

Keep your competitive edge in the international marketplace by improving your use of foreign languages. The Language Course, "Intensive French" will improve your linguistic ability in the shortest possible time.

HEATING

Saves on fuel usage

NEWLY DESIGNED by British Gas Midlands Research Station, a rat and tank heating burner is to be marketed by Wellman Selas.

ASSEMBLY

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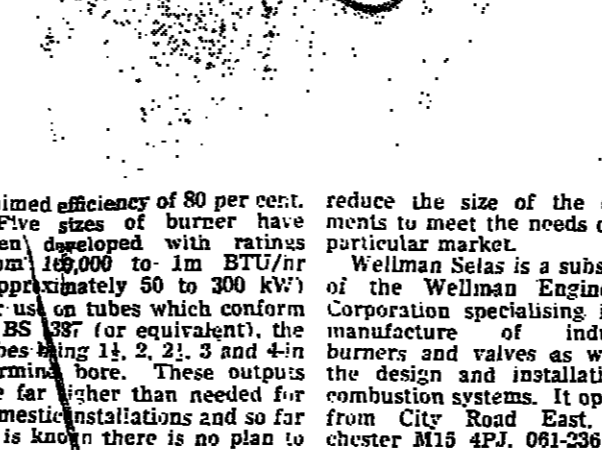
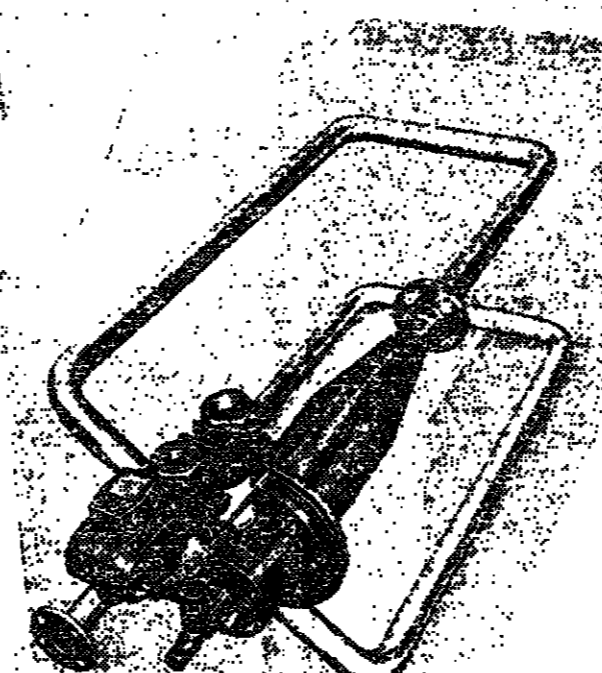
High speed weaving

WITH textile machine building generally at over-capacity throughout the world, current news is of companies being established to make machines for completely new processes.

VENTILATION

Collects and filters the smoke

FIGHT FOR energy conservation linked to pollution control has been joined by Myson with its new range of packaged industrial electrostatic air filters, known as Microstat.



AGRICULTURE

Better greenhouse crops

RAISING the CO2 level in greenhouses is a widely-used technique for improving the yield and quality of many vegetables, particularly lettuce, tomatoes, cucumbers, spinach and strawberries, says Heylo Heating and Ventilating, 53 Fleet Street, London EC4 (01-353 5601).

ELECTRONICS

Micro on a board

WITH SMALL scale automation and process control applications in mind such as automatic weighing and batching machine tool control, material handling and security systems, Startronic of Bexhill has introduced the SSC-1, a complete microcomputer on a single Eurocard measuring only 100 x 100 mm.

CONFERENCES

Sheet and strip

THE ANNUAL Conference of The Institute of Sheet Metal Engineering will be held at The Unicorn Hotel, Bristol (October 24 to 26), and will take as its main theme, "Sheet and Strip Processing".

Acquires the data

DESIGNED to meet the needs of modern systems engineering and control where the IEEE bus concept is being used for inter-communication, the 8000 series from Penmark Precision Measurement will provide timing, scan a basic 100 channels (1,000 are possible) and provide latching relay output control.

Atlas Copco compressed air systems. A force you can turn into profit.

Atlas Copco compressed air systems. A force you can turn into profit.

STORAGE Package for tapes. UP TO six audio tape cassettes can be fitted into a box injection moulded in one piece from polypropylene and now being produced by the industrial division of the Bland Association for the Blind.

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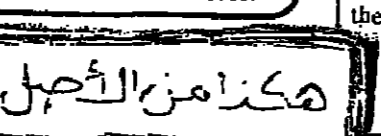
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# FINANCIAL TIMES SURVEY

Wednesday August 1 1979

حكايا من الأهل

# Satellites

As a technological tool of mankind, the unmanned Earth-orbiting satellite is still less than 22 years of age, but it has already revolutionised communications and meteorology, and looks like doing the same in many other fields in the years ahead.

## Keeping tabs on the Earth

By Michael Donne  
Aerospace Correspondent

THE WORD "satellite" first penetrated general consciousness with the launching of the Soviet Sputnik 1 in October, 1957. Since then, those unmanned, Earth-orbiting devices have become almost commonplace. While communications and meteorology (and particularly weather forecasting) remain at least for the present, the biggest single fields of satellite activity, the ever-expanding roles of the satellite now encompass two major fields. These are "scientific" satellites, which are aimed at expanding man's knowledge in many different scientific disciplines, and "applications" satellites, for a widening range of practical tasks. The latter include monitoring Earth's resources (a turn ranging from the detection of fish shoals to discovering mineral deposits), through to environmental studies and such other uses as navigation.

Satellite technology, and its associated communications links with the ground, are now sur-

rely well understood and established for the scientists throughout the world, but especially in the U.S. and Europe, to be able to spend more time and money on exploring new applications. The satellite itself has now become little more than a vehicle, into which an ever-widening array of micro-miniaturised components can be installed to make it do almost anything that mankind wants it to do. Whereas, initially, the size of satellites was restricted also by the ability of launch vehicles to cope, the impending emergence of new launcher systems such as the U.S. Space Shuttle and the European Ariane will enable even bigger satellites to be placed in space, and perhaps even the construction in space of satellites and space stations that could not be launched from Earth in one piece because of their size.

It is estimated that there are already more than 2,400 satellites of various kinds—communications, defence and others—in orbit round the Earth, and that over the next decade well over another 200 will be added to the score, for a wide variety of purposes. Many of these will be satellites for undeveloped countries seeking to improve their own communications links with the rest of the world and to get the benefit of the widespread new technological development that the growing field of satellites offers.

These developments, collectively costing several billion dollars, will all need to be financed. In many cases, of course, governments will be supporting the ventures as part of overall economic develop-

ment schemes. But in other cases, and especially where commercial satellite ventures are concerned, there will be a need for loans of substantial size—for the provision of, say, a three-satellite communications system with associated ground stations can cost anything up to \$150m. There is no reason why this kind of cash cannot be provided by existing financial institutions, in much the same way as new fleets of civil airliners are already funded. Indeed, a number of banks and other institutions in the City of London are already involved in this business.

The biggest single fields of actual and prospective satellite applications at present are in telecommunications and meteorology. There can be few TV viewers who have not by now seen pictures of events on the other side of the world almost as soon as they have occurred, or few businessmen sitting in their offices who have not been instantly connected with others many thousands of miles away—without realising the enormous strides in satellite and earth station technology that have made such developments possible in recent years.

## Pace

An example of the pace of development of satellites is afforded by the International Telecommunications Satellite Organisation (Intelsat), whose first communications satellite, Early Bird or Intelsat-1, of 1965 had a capacity of 240 two-way voice channels or one TV channel. The latest satellites, Intelsat-Vs, have an average of 12,000 simultaneous two-way telephone circuits and two TV

channels. The system is served by over 100 locally owned ground stations in more than 70 countries.

These and other satellite developments will continue through the 1980s, to the point where it will become possible for business organisations and industrial users to be immediately linked by video-phone to customers and others on the other side of the globe; for scientists in all disciplines to probe the Earth's surface with lasers and other devices to discover not only new sources of oil, coal and other minerals, but also to detect the incipient emergence of environmental problems, such as pollution, or even earthquakes, before they can grow to disastrous proportions; and for home TV viewers to set the latest satellite weather pictures or other data at the press of a button.

In the U.S., much of the past and present satellite activity has been and is undertaken by the Government-owned National Aeronautics and Space Administration. But there has also been a growing tendency for U.S. commercial organisations to develop in this field, such as the Communications Satellite Corporation (COMSAT), which manages the Intelsat system on behalf of the countries that own it, and other more recent organisations such as Satellite Business Systems, formed jointly by IBM, Comsat General (a wholly-owned subsidiary of Communications Satellite Corporation) and Aetna Life and Casualty.

In Europe, although many countries continue to run various space activities of their own, including the commercial manufacture of satellites for

both scientific studies and applications technology purposes, the major space developments are entrusted to the European Space Agency, set up in May, 1975. Its task is to provide for and promote, for exclusively peaceful purposes, co-operation among European countries in space research and technology, with a view to their use for scientific purposes and for operational applications. The members are Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden, Switzerland and the UK, with Austria, Canada and Norway participating in certain programmes.

The general budget for 1979 amounts to 370m accounting units (or about \$684m), with France and West Germany being the biggest individual subscribers at 33.4 per cent and 26.8 per cent respectively. The UK's contribution in 1979 is 11.7 per cent. The biggest single items of expenditure in the current year are the Ariane rocket launcher, designed to provide Europe with an independent satellite launching capability, taking 28.6 per cent of the budget, and the Spacelab, the manned orbital laboratory which Europe is developing as its contribution to the U.S. Space Shuttle, taking 22 per cent of the budget.

Since 1972, Europe has spent about \$2bn on space activities both through the ESA itself and its immediately preceding international organisations, such as the European Space Research Organisation and the European Launcher Development Organisation, both of which were merged into the ESA on its formation. While all member states are required to subscribe to certain pro-

grammes, such as the scientific programme of the ESA, other ventures are optional, such as the Ariane launcher, the Spacelab and various telecommunications and Earth observation satellites. The latter are funded according to a formula that enables States wishing to participate in a given programme to choose the level of their contributions freely.

Comparatively little detailed information is available about the use of satellites for defence purposes, but it is known that, apart from normal defence communications, both the U.S. and European nations already make considerable use of information derived from satellite surveillance of the Soviet Union and Warsaw Pact countries, and vice versa, and this is likely to become even more significant in future as part of the verification techniques of ballistic missile developments required under the SALT II agreement between the U.S. and the Soviet Union. Mr Lyndon Johnson, when President of the U.S., remarked that the reconnaissance value of space technology alone was worth many times the entire U.S. investment in all space activities, and this assessment must be even more accurate today. The long-term development of satellites as weapons-carriers cannot be ruled out. Technologically, it is already possible, but the mutual destructiveness of such systems appears to be sufficient at present to keep the major protagonists from embarking upon large-scale development programmes in this field.

Of more immediate significance, in the light of current

energy problems, must be the development of major satellite systems that can utilise the sun's energy in space and transmit it to Earth. In recent years, many ideas have been mooted for such developments, but hitherto, their high cost, allied to technical difficulties, have prevented any large-scale programmes from getting under way. As the energy difficulties on Earth multiply in the years ahead, however, it seems likely that increasing attention will be paid to such developments, and it is not beyond the bounds of possibility that within a very few years some major schemes will be initiated.

## Savings

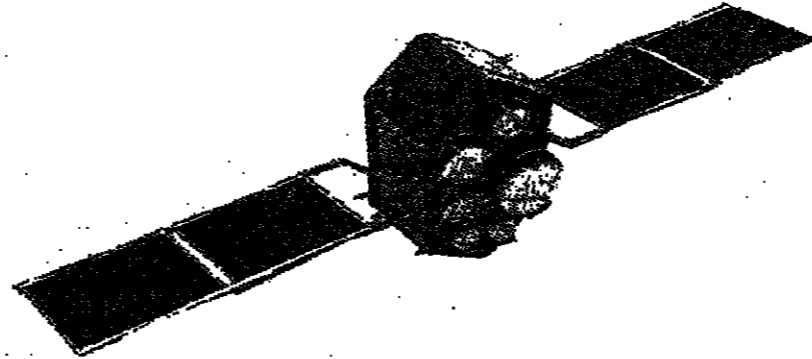
The cost of all these satellite developments over the past few years has been high. It is estimated that several billion dollars has been spent over the past 20 years or so in developing satellites and their associated Earth station technology. But there seems to be little doubt that this investment is now beginning to pay off, and will increasingly do so in the years ahead. According to a report by scientists in the National Environmental Satellite Service of the U.S. National Oceanic and Atmospheric Administration (NOAA), satellite observations of the Earth's atmosphere and surface are already saving industries and government agencies in the U.S. at least \$172m a year, and probably many times that amount. Satellite pictures and other data are increasingly being used as tools of management in the agricultural industry and in the fishing industry, and many other appli-

cations are emerging—EXXON, for example, uses satellite data to ride the currents of the Gulf Stream and thus save substantial amounts of cash and fuel annually in ship operation.

The NOAA report points out that other important activities made possible by satellite-generated information, such as local and global weather forecasting, do not allow for easy computation of cash savings or cost benefits. But the value is believed to be many billions of dollars. The saving of life alone by improved disaster warnings of hurricanes, severe thunderstorms and heavy rainfall or snowmelt is beyond value, and impossible to quantify.

The ESA, in a recent study of the cost-effectiveness of space activities, concluded that the economic benefits derived by companies involved in satellite and other space work amounted to several times the face value of original contracts, resulting in the creation of new products, improvements in the quality of work because of high technological content of space-related activities and widening commercial horizons for the companies concerned because of the need for international collaboration and diversification into areas hitherto unexplored.

As the NOAA report pointed out, the advent of the satellite can be summarised as probably the greatest single advance in the routine monitoring of the Earth and its environment in history, not only helping to save lives and property from natural disasters, but also contributing materially to the improvement of mankind and to the efficiency of the world's economies.



EUROPE'S PRE-OPERATIONAL COMMUNICATION SATELLITE ON STATION

## The proven success heralding great things to come

Another major achievement for British Aerospace Dynamics Group,

the ESA communications satellite OTS was successfully launched on the 11th May last year. Completed on time, and within budget, OTS is meeting all its design goals in orbit.

Orbital Test Satellite (OTS) has completed its first year in space. British Aerospace Dynamics Group was the prime contractor leading the MESH consortium that built it for the European Space Agency.

OTS is the pre-operational communications satellite being used to prove the design and system engineering embodied in the European communications satellite (ECS) now being built. The first is scheduled to be launched in 1981. OTS has met and exceeded the performance standards specified and is working perfectly, providing operational experience for European user authorities. It has also successfully performed tasks outside the original concept by receiving TV signals which can be received by small mobile ground stations and by transmitting TV signals which can be received by small mobile ground receivers. During its first year in space, the versatility of OTS as a TV link has been further demonstrated. It was manoeuvred to beam TV to Cairo and Rabat where transmissions were successfully received. French TV is now to be beamed to Algeria via OTS.

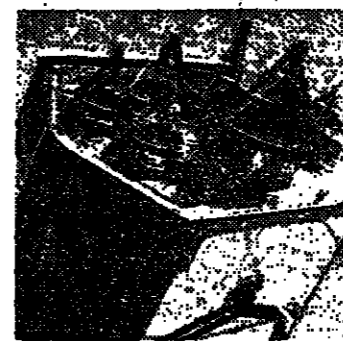
With 4 wide band channels OTS can accommodate up to 7,200 telephone circuits, or one channel can handle two TV transmissions. OTS is providing the telecommunications organisations of Europe with practical experience in operational use prior to the commissioning of the two ECS satellites in the early 1980s. Ground data link transmission is also being developed. OTS has a design life of five years but is confidently expected to remain in service beyond that.

Together with two maritime communications satellites, currently being developed for the European Space Agency, the new space programme represents contracts in excess of £75,000,000 and secures employment for many skilled designers and telecommunications engineers throughout Europe, led by British Aerospace Dynamics Group as Prime Contractor.

British Aerospace Dynamics Group is an acknowledged international authority in communications satellite technology. It has the expertise and the capability to provide regional communications systems virtually anywhere in the world today and is ready to do so.



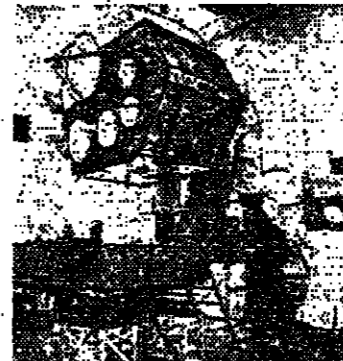
SERVICE MODULE ASSEMBLY



THERMAL MODEL



ANTENNA TESTING



RANGE PREPARATION



INSTALLATION FOR LAUNCH

## Complete Regional Communication Systems

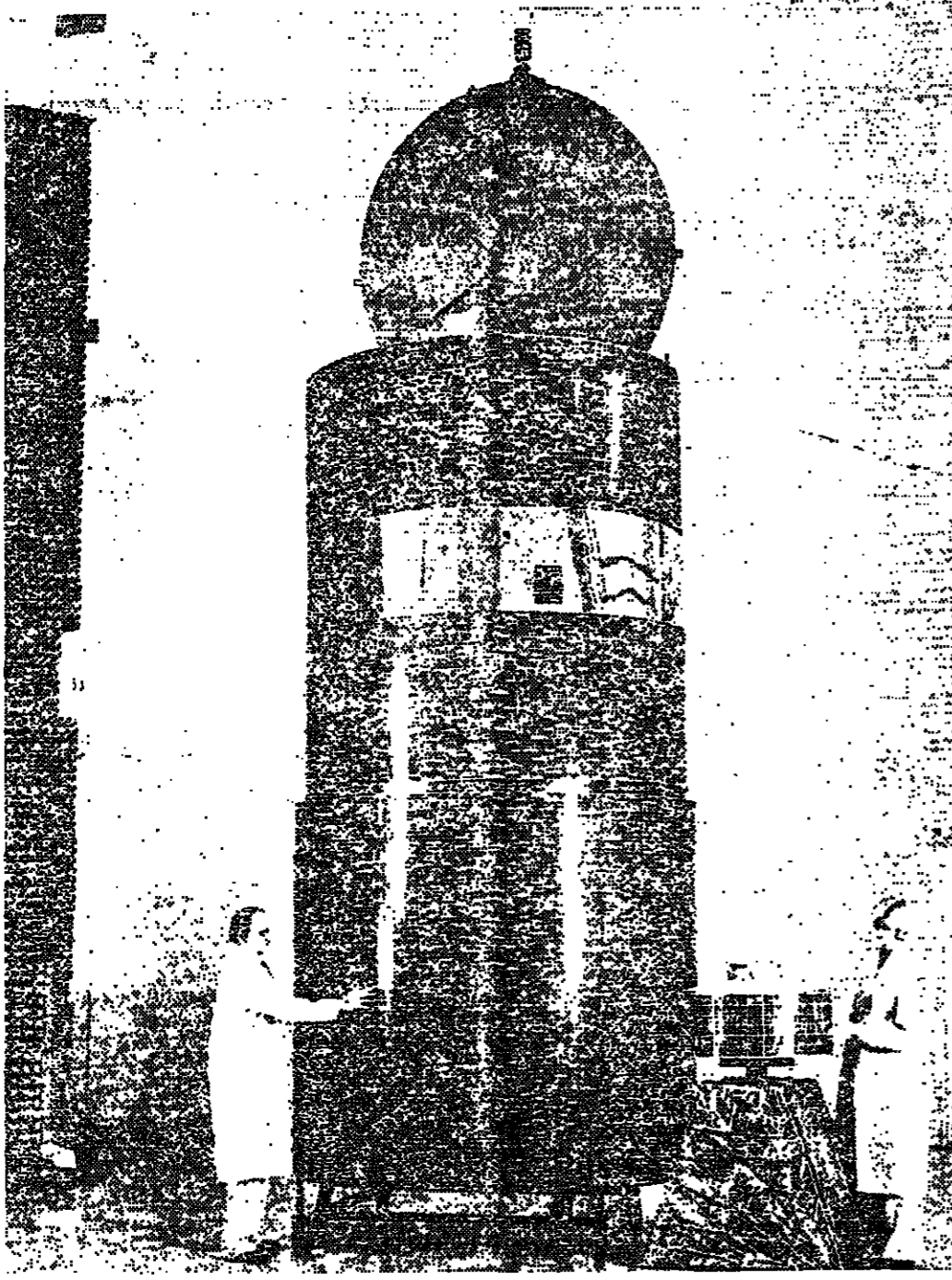
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SATELLITES II

# Civil applications



The rapid growth in the size of communications satellites in less than 20 years is shown in this picture. The U.S. Hughes Aircraft Company's Syncom satellite of 1963 had capacity for 50 two-way voice channels or one TV channel. Dwarfing Syncom is a full-scale model of the type of spacecraft to be used in the planned U.S. Satellite Business Systems venture, with capacity for 13,900 simultaneous telephone calls. The SBS satellites will provide U.S. business customers with integrated voice, data facsimile and teleconferencing facilities from 1981

THE CIVIL applications of satellites, as opposed to the scientific tasks they undertake, range widely across not only telecommunications and meteorological studies—still the two biggest single uses for satellites—but also such things as "Earth resources monitoring" and environmental studies. These are also very wide fields of applications, including such diverse things as studying the movements of fish shoals, helping the sea-fishing industry, and other aspects of oceanography, through to navigation, measuring pollution over cities and industrial areas, and helping to determine the location of new mineral deposits. Many of the satellites undertaking these latter tasks are known as "remote sensing" satellites, and already there have been a large number of them, collectively known as the "Earthnet" programme, including the U.S. Landsat, Seasat and the Nimbus satellites.

In Europe, much work has also been done already on this type of Earth observation from space, and plans are being laid to expand it substantially through the 1980s. These include the provision of microwave remote-sensing experiments in the European Spacelab manned orbital laboratory that will be part of the U.S. Space Shuttle Reusable Space Transport programme. It is also planned that the Spacelab will carry a metric camera, a modified Zeiss RMK A 30/23 high-quality aerial mapping camera, to determine the feasibility of producing small-scale maps from space photographs.

The longer-term plans in Europe for a remote-sensing programme include studies for specific satellite payloads that would be capable of studies into agriculture and forestry, water resources, environmental moni-

toring, global ocean monitoring (including studies of the polar ice and the circulation of currents) and coastal ocean monitoring (including studies of fisheries and surveillance of oil exploration and other activities on the European continental shelf).

In the meantime, much work has already been done in Europe by the European Space Agency in such fields as meteorology and telecommunications. The meteorological satellite, Meteosat-1, was launched in late 1977. Every 30 minutes, this satellite provides images of the Earth and its cloud cover, and distributes them to users of the data. Meteosat-1 represents Europe's contribution to what is known as the "World Weather Watch," in which U.S. satellites also participate, and also to the Global Atmospheric Research Programme. Meteosat-2 is planned to be launched by one of the Ariane rocket development flights in 1980.

## Dual

Another meteorological satellite planned for launch by Ariane in 1981 will be Sirio-2. This will have a dual role—the distribution of meteorological data, particularly to African countries which do not have equipment of their own to get data from the World Weather Watch, and also to synchronise on a world scale the atomic clocks (to a precision of one nanosecond, instead of the present figure of 100 nanoseconds), by means of laser echoes on reflectors placed on the satellite.

The Meteosat was built for the ESA by the COSMOS industrial consortium, under the leadership of Aerospaiale of France, and including Marconi Space and Defence Systems of

the UK, Selenia of Italy, ETCA of Belgium, and Siemens of West Germany.

Many companies, but especially those in the aerospace and associated electronics industries, are involved in satellite design, development and manufacture, as well as in the provision of the "ground stations and associated infrastructure that the "space segment" requires to be fully usable for mankind. The high precision technology that this work requires is leading these companies into new fields of activity, and is continually spearheading the development of new industrial techniques, especially in such areas as the micro-miniaturisation of components.

In addition to the "space segment," the "ground segment" has developed just as rapidly, with some companies specialising in the design and development of receiving and transmitting stations, including Cable and Wireless and Marconi Communications Systems in the UK.

The size of this side of the satellite business can be gauged from the fact that there are now estimated to be some 200 earth stations in more than 80 countries, providing well over 217 antennae, and many more are likely to be built through the 1980s.

In order to meet the requirements of the European posts, telecommunications and broadcasting administrations for point-to-point communications (telephone, telegraph, telex, Eurovision TV programmes and data transmission), the European Space Agency some time ago developed the Orbital Test Satellite (OTS). The first of these was lost on launching in 1977, but the second has been functioning successfully since May, 1978. The aim of OTS-2 has been to demonstrate the performance of on-board satellite equipment, and to provide an experimental, pre-operational traffic capacity of 6,000 telephone circuits or 4,500 telephone circuits and two TV channels.

This work will lead into the development of the European Communications Satellite system (ECS), the first satellite of which is due to be launched aboard the Ariane rocket in late 1981. Earlier this year, an organisation called Interim Eutelsat, comprising 17 of the European telecommunications

administrations, signed a \$200m agreement with the ESA for the provision of five satellites over the next decade. Under this arrangement, the ESA will provide the "space segment" for the next 10 years.

The contract for the first two satellites has been placed by the ESA with the British Aerospace Dynamics Group, leading the MESH consortium of industrial companies from 10 European countries. The contract for the supply of the next three satellites is still under discussion. The ECS programme will provide Europe with a regional communications system, covering telephone, telex, TV and data transmission, with a capacity equal to 20,000 telephone circuits, or 12,000 circuits and some TV channels. The first satellite will be launched in late 1981, and the second some ten months later. One will be in use, with the other as a back-up, ensuring continuous operational service.

## Maritime

A programme of development of European maritime satellites is also under way, called Marecs, derived from the ECS satellite, and aimed at making it possible for ships at sea to communicate instantly with shore stations thousands of miles away. The first two satellites, Marecs A and B, are scheduled to be launched by the European Ariane rocket in 1980 and 1981. The operation of the system, including a network of six satellites (three Marecs and three Intelsat-Vs equipped with maritime payload), will be entrusted to a new international maritime communications organisation, INMARSAT.

Many of the European communications satellites, including the OTS, the GCS and the Marecs, have been or are being developed by a major consortium of companies, called MESH, which includes Euginas Matra from France, ERNO from West Germany, SAAB-Scania from Sweden, British Aerospace's Dynamics Group, Aertalia from Italy, INTA from Spain and Fokker-VFW from Holland. MESH companies have individual consultancy contracts with TRW Systems of the U.S., thus providing further technical backing for the consortium.

One area of development that is of particular interest to these companies is the pro-

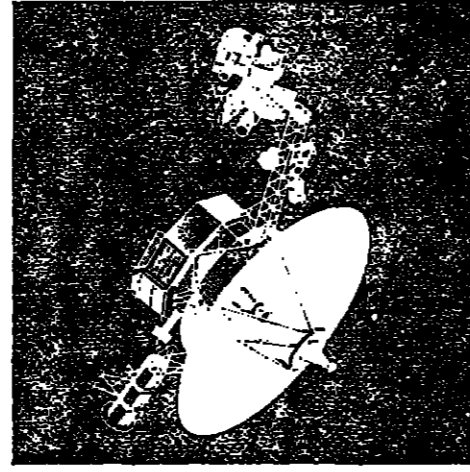
vision of "regional satellites" for communications in particular parts of the world—the supply not only of satellites but also of the associated ground infrastructure including receiving and transmitting stations, and even, if necessary, telephone and television studios where these do not already exist.

Also under development in Europe is the H-Sat, a heavy experimental satellite of about 900 kg, for launch aboard the Ariane in 1982. This is intended to be the forerunner of a large platform in space able to carry a variety of future television and radio communications payloads for direct transmission into homes or community antennae—enabling the dissemination of such programmes over a much wider area.

Beyond these, the ESA has its Advanced Systems and Technology Programme, designed to prepare future satellite systems. Ideas now being developed include the Stella experiment, aimed at exploring high-speed digital data transmissions via satellite and the Spas project (Space Information Network Experiment), designed to become operational next year, and aimed at experimenting with new methods of disseminating documents using high-speed digital facsimile equipment. The possibilities of video-phone conference facilities will also be studied.

It is regarded as vitally important that Europe develops its own data facsimile transmission systems—so as not to be left behind in the 1980s by developments in the U.S. There, Hughes Aircraft, probably the world's biggest manufacturer of satellites, and associated systems, is already at work on the programme of satellites for the Satellite Business Systems (SBS) group, a consortium formed by IBM, Comsat General Corporation, and Aetna Life and Casualty. Three satellites are being built, with first launch planned for mid-1980. The aim is to provide a domestic U.S. satellite system for private users (business, government agencies and other organisations) with large communications needs, giving them instantaneous data, facsimile and teleconferencing facilities from 1981.

Michael Donne



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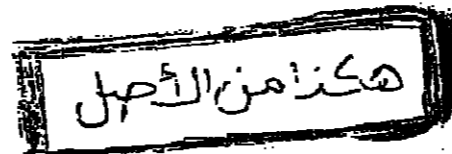
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# Reducing the cost of launchers

THE NEXT significant event in manned spaceflight is likely to be the first operational launch next year of the manned U.S. Space Shuttle, otherwise known as the "Manned Reusable Space Transport System." While budget cuts have obliged the National Aeronautics and Space Administration (NASA) to slow the pace of development of the Space Shuttle, it is currently planning to launch the Shuttle some time between next March and June, unless further budgetary delays occur.

The Space Shuttle is one of two major launching facilities for satellites and other space activities now under development in the Western world for the 1980s, the other being the Ariane conventional heavy launcher rocket now being built by the European Space Agency. This would be satellite users during the 1980s will have a choice of launching systems, and tough price competition is likely to develop as both systems come to fruition. Already, both systems are collecting customers world-wide, from countries, universities, telecommunications authorities and even commercial and industrial clients who are anxious to have their own satellites in the decade ahead.

## Crew

The Space Shuttle comprises an "Orbiter" vehicle, about the size of a small airliner which will be sent into near-Earth orbit by two "Booster" rockets. The Orbiter will carry a small flight crew and a small team of scientists or other astronauts. Both Orbiter and Booster are designed for recovery and refurbishing for future use. Each Orbiter vehicle is intended to be used for 100 space missions and each Booster for 20 missions.

The Boosters will fall into the ocean for recovery and shipment back to the Kennedy Space Centre in Florida, while the Orbiter vehicle will fly back into the Earth's atmosphere on completion of a given mission (such as placing a satellite in orbit or repairing a damaged or defunct satellite) to land at the Kennedy Space Centre like an airliner, on a special runway three miles long.

The aim of the system is eventually to reduce the cost of satellite launching by providing a frequently usable

system. The Orbiter will have a cargo bay containing satellites or other payloads for scientific or other activities in space. In Europe, the European Space Agency, as part of its own contribution to the Space Shuttle, is developing what is known as "Spacelab," a manned and reusable space laboratory which will be carried on Earth orbital missions in the cargo bay of the Shuttle's Orbiter vehicle. Up to three people—scientists, engineers and technicians—will be able to work in Spacelab for periods of about a week.

The first flight model of Spacelab is to be delivered to NASA by the ESA in 1980. The ESA has selected three Europeans—Johannes Meibold (Germany), Claude Nicollier (Switzerland) and Wubbo Ockels (Netherlands)—to participate in the first Spacelab mission in 1981 as European payload specialists. A total of 76 scientific and technological experiments—60 European, 15 American and one Japanese—have been chosen for this first Spacelab mission, covering such things as astronomy, physics of the atmosphere, solar physics, plasma physics, earth observation, life sciences and the processing of materials.

In its mission plans for the 1980s, NASA envisages approximately 400 Space Shuttle flights, 40 per cent of which, or about 150 to 160 flights, will be assigned to Spacelab missions. Programmed design improvements to Spacelab are intended to widen its mission capability, and eventually enable it to stay in orbit in the Shuttle Orbiter for periods of up to a month, with free orbital flight outside from the Shuttle Orbiter for long missions. Spacelab would thus represent the first stage of a modular space station in orbit, regularly visited by the Shuttle Orbiter, and which could serve as the basis for the construction and assembly in orbit of large space systems for a wide range of tasks.

Europe's own rival to the Space Shuttle itself as a satellite launching system will be the Ariane, a heavy launching rocket intended to give Europe an independent capability for its own applications and scientific satellites, and to enable it to win a share of the substantial launcher market forecast for the 1980s—estimated at more

than 200 satellites of various kinds.

Ariane, which is being developed by a consortium of European companies (the system integrator being Aerospaiale of France) is designed in particular to place satellites of up to 970 kg in a geostationary orbit (in which the satellite remains virtually in the same spot over the earth's surface, its orbital speed being geared to the Earth's own rotational speed). The aim is to have the Ariane operational by the end of 1980.

Four development firings in the qualification programme are scheduled for November this year and March, June and October 1980, and will be carried out from the Ariane launch site located within the Guiana Space Centre at Kourou, French Guiana. The first launch will carry a technological capsule and ballast; but the other three are intended to put various satellites into orbit, including Anisat (an amateur radio satellite), Meteosat-2 (the second flight model in the European meteorological satellite series), Apple (an Indian experimental communications satellite), and Marecs-A (the European maritime communications satellite).

In addition to these, the first six production Arianes have now been authorised for a wide range of satellites in the early 1980s. These include Exosat (second half of 1981, for studying celestial X-ray sources); Marecs-B (first half of 1981, for maritime communications); Sirio-2 (possibly at the same time as Marecs-B) for meteorological data distribution in conjunction with the World Weather Watch, and synchronisation on a world scale of atomic clocks by means of laser echoes on reflectors placed on the satellite; ECS-1 (end-1981, the first operational European Communications Satellite); the French Earth observation satellite, SPOT; and a communications satellite in the Intelsat-V series.

The ESA says that Ariane will also be used for further launchings of satellites in the European Communications Satellite programme. The ESA believes that during the 1980s there will be at least 30 to 40 Ariane launchings, in many cases putting two satellites into orbit with one launch.

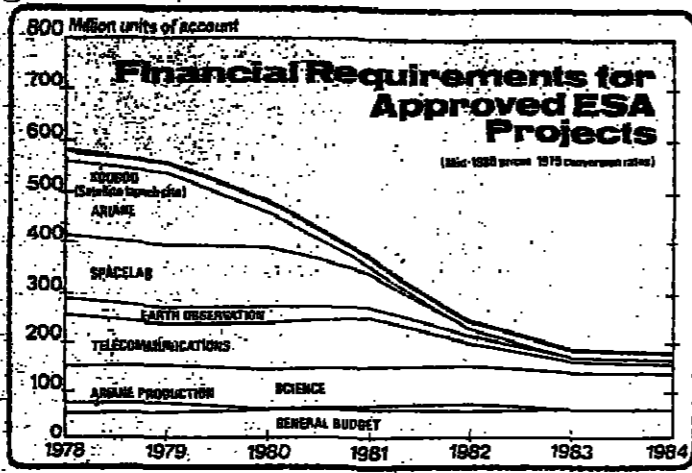
M.D.

SATELLITES III

# At the service of science

IT MAY seem a far cry from the peat bogs of Scotland to the sophistication of an orbiting satellite. But scientists at a research centre near Aberdeen are making good use of the high-powered cameras of one space research programme of the U.S. National Aeronautics and Space Administration, in mapping the peat resources of the Highlands and Islands.

The Macaulay Institute for Soil Research, an Agricultural Research Council laboratory, is buying photography on magnetic tape obtained by NASA's Landsat programme of earth resources surveillance. They use this colour imagery to guide their own flights in light aircraft. Their aim is to compile a data bank on an underexploited energy resource. Apy, this year, data bank has been christened MIDAS—Mira Information Data Acquisition.



Rarely can space research activities seem quite so down to earth as in their use in remote sensing of natural resources—unless, one counts the creation of NASA's Skylab when it re-entered the atmosphere prematurely last month. But space activities which only a decade ago seemed remote from daily life are already familiar enough to be easily overlooked; for example, the trans-Atlantic telephone calls via satellites, distinguished by their slightly disconcerting pauses, and the "nightly meteor" pictures of Britain's weather report on BBC television in recent months.

Meteosat-1, Europe's contribution to two international meteorological research programmes—the World Weather Watch and the Global Atmospheric Research Programme—was launched into geostationary orbit late in 1977. This satellite, designed by the European Space Agency to serve the specific needs of Europe's meteorological offices, is the first of a series of five spread along the equator, the others being provided by the U.S. (2), the USSR and Japan. Its data processing centre is at Darmstadt, West Germany.

Meteosat-1 has three main missions. First, it is imaging the earth's surface and cloud cover simultaneously in three spectral bands at intervals of 30 minutes, using its telescope radiometer. Second, the satellite itself disseminates the image and other data from Darmstadt to the more remote meteorological offices. Third, it gathers environmental data by UHF

radio from ships, buoys, etc. and relays it back to Darmstadt. Initial performance has delighted the meteorologists and provided them with novel views of the earth's atmosphere—such as regular photographs of the moisture content of the entire atmosphere.

Currently the biggest sector of spending by the European Space Agency (ESA) is on Spacelab. This is the manned space laboratory Europe is building to be carried into orbit by the U.S. Space Shuttle, and—unlike Skylab—to be retrieved and brought back for refitting after up to a month in space. Spacelab is a pressurised laboratory module about 4 metres in diameter and up to 7 metres long, within which two scientists will be able to work in a "shirt-sleeve" environment. In addition, the satellite will be able to tow up to five "pallets" carrying larger instruments.

The first Spacelab payload—originally scheduled to be flown late in 1980, but likely to be delayed by problems with the Space Shuttle—has been designed as a multi-disciplinary demonstration of the versatility of the Spacelab laboratory concept. From more than 2,000 responses the others being provided by the U.S. (2), the USSR and Japan. Its data processing centre is at Darmstadt, West Germany.

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materials science laboratory, designed to perform 37 experiments in crystal-growing and the properties and behaviour of materials under gravity-free conditions. Whether or not the results suggest ways of refining more perfect materials, as space enthusiasts often suggest, they should certainly shed much light on the dynamics of materials during the formative stages of the earth and other planets, and of the earth's oceans and atmosphere today.

ESA is also building an orbiting X-ray telescope called Exosat, to investigate cosmic X-ray sources well beyond any interference from the earth's environment. It is designed to be placed in a highly eccentric orbit with an apogee of 200,000 km, so that it can accurately measure the size and structure of X-ray sources deep in space. Scientifically, the project is a collaboration between 10 research teams in Britain, Holland, West Germany and Italy, together with ESA itself. But for the first time in an ESA/ESRO programme, ESA is financing and managing the scientific payload. The project is essentially an ESA observatory, feeding data to many scientists outside the 10 groups participating directly. The satellite is scheduled to be ready for launching in 1981, either by ESA's own Ariane or by a Thor-Delta launch vehicle.

Europe is also participating in NASA's most ambitious scientific project in space

astronomy, the space telescope, a 2.4-metre aperture instrument designed to be carried aloft by the Space Shuttle. Scientists believe that the space telescope, designed for a 15-year life, will dominate space astronomy for the rest of the century. It will be accessible by Space Shuttle for repair and maintenance, and if necessary will be brought back to earth for a major overhaul. Thus the telescope will be kept at the forefront of scientific technique, just as if it were a terrestrial observatory.

The Space Telescope is scheduled for launch in 1983. In return for its work on some of the instrumentation and the solar power system, ESA is guaranteed 15 per cent of the observing time available. As it points out, this share exceeds the entire clear dark time available on a ground-based telescope. The space telescope is expected to offer astronomers an order-of-magnitude improvement in sensitivity, resolving power and spectral range over present-day instruments.

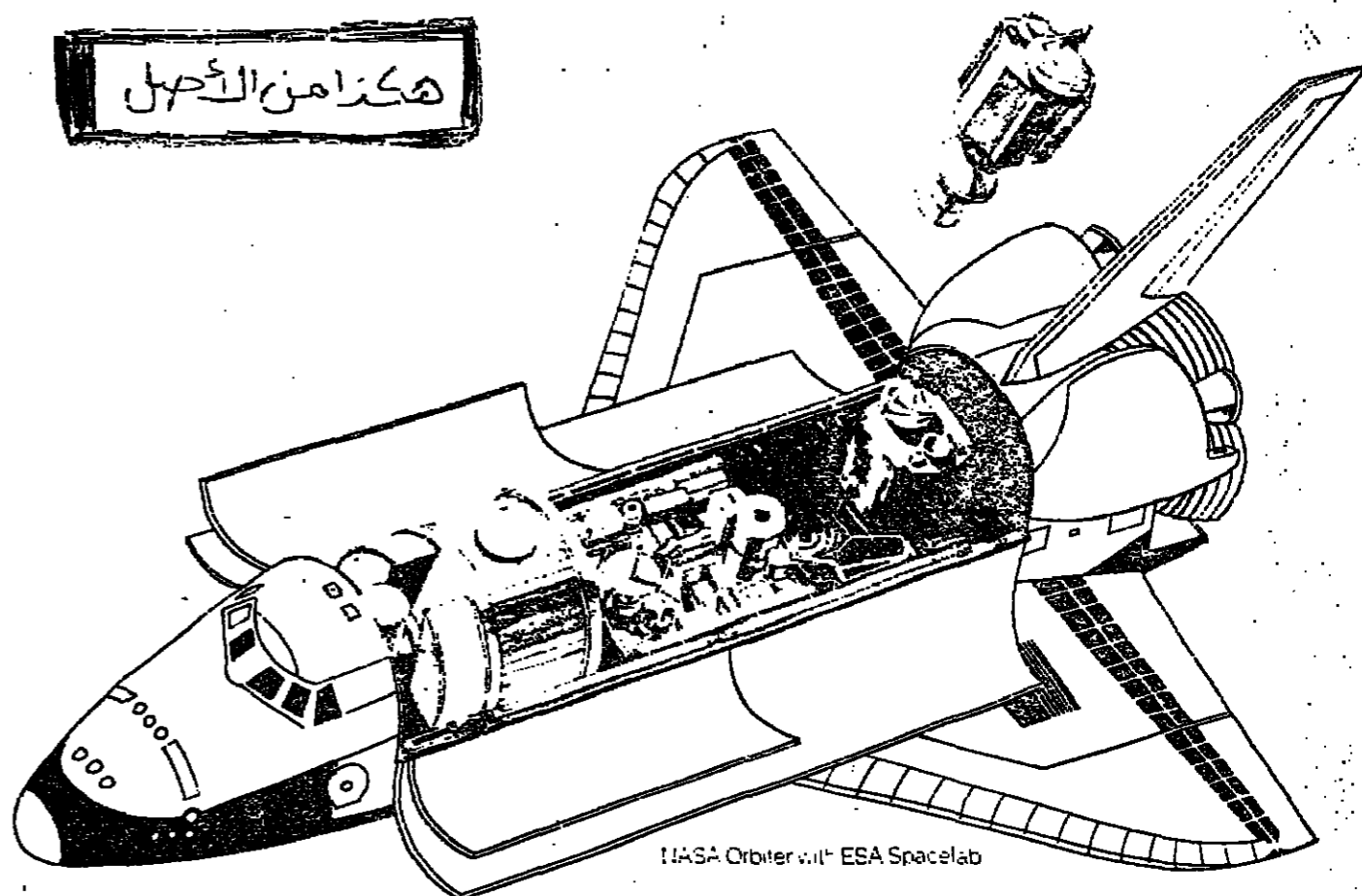
ESA, in its present form, came into existence in 1975, when the original ten member states voted that the new agency should take over the rights and obligations of two precursor organisations, ESRO and ELDO, and responsibility for the Ariane launch base at Kourou in French Guiana. At present its budget, as can be seen from the accompanying curves of financial requirements for approved programmes, is distributed heavily towards the development of an independent European launch capability, and the application of space, especially to telecommunications. But Mr. Roy Gibson, ESA's director-general, has said that ESA is "intent on preserving and if possible expanding its scientific programme, and there are indications that ESA member states will support such an expansion."

A recent survey of financial planning by ESA suggests that an annual budget of \$80m Units of Account would result in good continuity in European programmes. If this were to fall to 420m Units of Account, however, ESA would have to reduce its space activities considerably.

David Fishlock  
Science Editor

# Room for Rent.

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MCDONNELL DOUGLAS

# Power stations in space

IN AN office in Cambridge, Massachusetts, a decade ago a British-educated engineer warned to his theme that the development of solar energy was "the most sophisticated way we can use energy." The popular view, said Dr. Peter Glaser, is that solar energy is free and all we have to do is to catch it. In fact, even quite simple uses such as solar stills are very difficult to design satisfactorily.

Today Dr. Glaser is identified worldwide as the chief proponent of the most ambitious of all schemes for harvesting solar energy. If President Carter's declared goal of obtaining 20 per cent of the U.S. nation's energy directly from the sun is ever to be realised, it is likely that a large proportion must come from the solar power satellite.

The solar power satellite (SPS) would be geostationary satellite—that is, placed in orbit high enough to remain above the same spot on the earth's surface, as for example telecommunications and broadcasting satellites must do. Its acres of solar cells would be constantly illuminated by the sun. The electricity (direct current) generated would be converted to microwave frequency so that it could be beamed 23,000 miles back to earth. Here it would be caught by great "radio-telescopes" and converted into low-frequency alternating current to enter the national electricity grid.

Dr. Glaser, now a vice-president of Arthur D. Little, the engineering consultants, developed this idea from work his company was doing at the start of the U.S. space programme on the thermal properties of materials in space. He built a solar furnace, to generate very high temperatures, but became frustrated by the fact that the sun would not shine for long enough

to get things done. In 1968, he put forward on behalf of his company a tentative scheme for the SPS. Slowly, as the U.S. space programme has declined in public and political interest, the SPS concept has matured into a study, with \$5.6m of U.S. Government funding allocated for 1980. But a Bill before Congress aims to raise this to \$25m, and the "windfall" tax on U.S. oil companies may provide still more generous funds.

The present goal of the SPS enthusiasts is a prototype SPS designed to yield about 5,000MW of electricity—more than any thermal power station on earth today. The cost, according to the U.S. National Aeronautics and Space Administration, is currently put at about \$25bn—the cost of the Apollo programme to put a man on the moon.

As might be expected, the U.S. aerospace industry is enthusiastic about the idea, not least because if successful it would represent a tenfold expansion in man's use of space, for one single purpose. Such companies as Boeing Aerospace, Grumman Aerospace, Lockheed Missile and Space, Martin-Marietta Aerospace and McDonnell Douglas Space and McDonnell Douglas Space and McDonnell Douglas Space, the Washington-based organisation headed by Dr. Glaser, which aims "to foster the development of solar power satellites for the purpose of providing an inexhaustible energy source for the public benefit."

The American Institute of Aeronautics and Astronautics has concluded that a level of spending of about \$30m a year for the next five years would be appropriate for advancing the technology to the point where a firm design for a prototype SPS might be attempted. At the moment there are, it says,

"still too many promising but unexplored technical options." Many of these have been outlined by Dr. Glaser himself, most recently late this spring at the 16th Space Congress at Cocoa Beach, Florida, close to Cape Canaveral. He claimed that the long microwave "cable" to earth could be at least 55 per cent efficient, with the prospect of improving to 70 per cent. He also claimed that the lifespan of an SPS would be at least 30 years—possibly 300 years.

As he envisaged his "reference design" of SPS, it would consist of "solar sail" in geostationary orbit, focused on a microwave aerial on the ground. Sunlight would be harvested by a rectangular array of silicon or gallium arsenide solar cells, measuring an astonishing 10 km by 5 km. The solar cells would produce direct current, which would be converted by microwave of a wavelength of about 10 cm—chosen to minimise radio-frequency interference on earth. These would be transmitted from a flat circular aerial about 1 km in diameter. To allow for the spread of this microwave beam on its long journey, the receiving aerials would be ten times the diameter of the transmitter.

### Scale

Some idea of the scale of operations required if the SPS should be accepted as a U.S. national power production project was also offered by Dr. Glaser. To assemble the huge engineering structures in space, the project would need not only an advanced version of the Space Shuttle scheduled to make its debut in the coming months, but also the development of a large "space freighter." This craft would be capable of orbiting a payload of up to 500 tonnes, as is Boeing's proposed heavy-lift launch vehicle, for example. In effect this would be an orbiting warehouse, stocked with the construction materials and such machine tools as automatic beam welders. He envisages a construction team of 550—small by terrestrial power station standards but still very large by any standard of space activity. Ten launch sites for shuttles and space freighters would be needed to keep it serviced. Once assembled, however, it is envisaged that the

SPS would be operated by remote control from the receiving points on the ground.

Not surprisingly, there are plenty of sceptics and even dedicated opponents of the SPS. One objection comes from those opposed to all centralised control of electricity, whose attack hitherto has focused particularly on nuclear power as the new source of centralised power. It is raised by those who see it intruding in new and not necessarily benign ways into man's environment. The main inefficiencies—conversion of sunlight to electricity and its subsequent conversion to microwaves—stay far out in space, so "thermal pollution" is well away from the atmosphere. But problems could still arise from the microwave beams, not least if their focus should shift from the receivers on to a city. Moreover, the rocket exhaust from the immense number of space launches from the terrestrial launch sites could well introduce new atmospheric pollution problems.

Dr. Robert Froesch, administrator of the National Aeronautics and Space Administration (NASA), was sufficiently wary of the SPS concept to quash any idea of lobbying on NASA's part for an early start to the project. In Europe a few months ago to discuss progress on the Space Shuttle, Dr. Froesch admitted that he was "rather sceptical" about several aspects. He wanted to know more about the engineering problems, the environmental effects and, above all, the economics.

"I certainly don't understand the economics and I'm not sure that those who talk about it do," NASA's current estimates, he said, suggest that electricity from an SPS would be no cheaper than an equivalent amount of nuclear or coal-fired plant, even though the fuel would be free. And the project would have the disadvantage of requiring all its capital at once, for a very large tranche of electricity. Figures NASA has been conjuring with are \$50bn to set up the project and another \$25bn to build the first SPS. But even these figures made such assumptions as solar cell efficiencies of 17 per cent—and we've barely done that in the laboratory."

David Fishlock



RADIO COMMUNICATIONS

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LOMBARD

Breaking away from £8½bn

BY PETER RIDDELL

THE FIGURE £8½bn has assumed a symbolic significance for the City in the last three years. Above this level public sector borrowing has been regarded as excessive and below it the markets have in general been content, or at any rate willing to buy gilts. Whenever borrowing has even threatened to move above this figure the alarm bells have rung.

Main point

A borrowing limit set as a fixed money figure can be criticised on both monetarist and non-monetarist grounds. The main point is that such a target ignores other economic influences. For instance, the impeccably monetarist London Business School argued in its recent Economic Outlook that a projected rise in public sector borrowing from £8.5bn in the current financial year to £10.9bn in 1980-81 should not cause concern.

One target

The Government's thinking was indicated by Sir Geoffrey Howe in a written answer just before the recess. He reaffirmed the official commitment to a progressive reduction of the rate of growth of the money supply and as a means to that end, we are determined to reduce the PSBR as a percentage of GDP.

TV Radio

6.40-7.55 am Open University (Ultra-high frequency only). 9.30-10.00 am News. 10.10-10.30 am Why Don't You... 10.35-10.55 am The Flashing Blade. 1.15 pm News. 1.30-1.45 pm News. 2.00 pm News. 4.18 pm Regional News for England (except London). 4.20 pm Play School (as BBC2 11.00 am).

F.T. CROSSWORD PUZZLE No. 4036

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

ACROSS
1 Value of total sales in pastry (8)
5 Walk with goblin from the south (6)
9 Lad embracing handsome woman is tagged (8)
10 Sly about gun put back comfortably (8)
12 Gold cut off top of deck (5)
13 Check light for important game (4-5)
14 A small drink for each little boy (6)
16 Scrape away profit (4-3)
17 Bridge or, other card game (7)
21 Do pray for a change in burlesque imitation (6)
23 Most ignorant however (9)
25 Machinery to set in position (5)
26 I'll fish around for support (6)
27 Vital jewel for old cops (8)
28 Favourite returning in favours' regard (6)
29 Give evidence at trial before editor (8)

Solution to Puzzle No. 4035
A U E O O O O O Z A V A A O
O S F A C T S S E R V I A O
C E D E N T S E R V I A O
O M A O M A R E D U O
N S Y M A R A N A
O A M A P L E A C H I M G N Y
O A M A P L E A C H I M G N Y
O A M A P L E A C H I M G N Y
O A M A P L E A C H I M G N Y
O A M A P L E A C H I M G N Y

Roses: a case of Lovett first sight

THE HOT and heavy weather has not done justice to the best of this summer's roses. They bang their heads and quickly lose their petals. The reds turn purple and fade. The whites go brown at the edges. No rain knocks off the dead flowers. There is none of the damp coolness which does so much for their evening scent.

England, she finds the frosts at times too much for her. She likes to go south for the winter. In a Mediterranean bolt-hole, she would be at her best. Some ten feet high if well-watered and fed.

To my eye, the ramblers and climbers are the most spectacular in such a season. Their large blankets of flower, are held at a height where you cannot see their individual imperfections. No other country has the same profusion of climbing roses, not even the hill villages of those parts of Afghanistan where the huge white single-flowered varieties grow wild through the poplars.

If you are packing up your golden yards of sterling and buying a place in the European sun, remember to think of taking Lady Hillingdon with you. What a warm, she would make a superb companion, a lady of no fuss, no pests, no nasty smells, healthy for a lifetime and free with her charms.

Consider height and season carefully. This year, I can still enjoy the fruits of an earlier lady. Sure 1981 will have luxury in my way through a jungle in order to get any mid-summer articles off to the printers. For I have gone and put the small flowered white felicitate et perpetue on a seven-foot high garden shed.

Bred in 1910, she started climbing in 1917. It took her far. She is not so fashionable nowadays, despite the title and the good track record. But her qualities are still unsurpassed in any one rose. Her flowers have two seasons and a bud or two in the interval. They are shapely, as all the lady-roses of her time once were.

Climber choice

If you have just bought yourself a home for a few roses and are wishing to OPEC that it was nearer the centre of the town, console yourself, at least, with the choice of climbers which is open to you. If you have an eye for colour, you must begin from the colour of your house's walls.

The shell-pink Aida Lovett shades into yellow at the base of the large flowers, but makes a fine companion. I unjustly ignored since her birth in 1905. It was Lovett first sight when I saw her this summer on an old wall, not least because of her vigour and sweet scent. It is a commonplace that modern bush roses are never better than the old time. The same truth, however, is seldom seen in the climbers too. Flat white Scabellia healthy yellow early yellow buff-yellow old rose Floribunda these are still roses which draw few pests and all eyes. Among roses, the newest is very seldom best.

Thatching looks set for hat-trick

THATCHING, valued at about £1m by Mr. Robert Sangster after the colt's July Cup triumph, will double that valuation if successful in today's Sussex Stakes.

GARDENS TODAY

BY ROBIN LANE FOX

climbers which only the specialist nurseries still try to spread. Peter Beales, Intwood Nurseries, Swardeston, Norfolk, will quote you a price for any I mention if your local sources fail.

ENTERTAINMENT GUIDE

OPERA & BALLET
COLOSSEUM. Credit Cards. 01-240 5258.
GARDENS TODAY
BY ROBIN LANE FOX
climbers which only the specialist nurseries still try to spread.

RACING

BY DOMINIC WIGAN

prospect, but a colt with those legs and also the ability to maintain ascendency over a mile joins an even more illustrious category.

THEATRES

ADOLPHI THEATRE. 01-236 7611.
ALBERT. 01-236 7611.
ALHAMBRA. 01-236 7611.
ALHAMBRA. 01-236 7611.

GOODWOOD

2.15-Ormanor
2.45-Yarling
3.30-The Solent
4.00-Thatching\*\*
4.30-Tilting
5.00-Punny Sunday\*\*

Radio Wavelengths

1 105.2kHz/275m
2 681kHz/433m
3 1215kHz/247m
4 200kHz/1500m

ART GALLERIES

MARLBOROUGH. 6, Abchurch Lane, W.C. 1A.
O'NEILL GALLERIES. 22, Strand, W.C. 2R.

THE ARTS

Television

Out of a summer sky by CHRIS DUNKLEY

Having roundly berated the broadcasters not once but twice recently for the trashiness of their summer season and the absence of fresh material...

The most significant contribution to it so far has been Gossip From The Forest, the first in a series of Granada plays under the umbrella title "Screenplay".



Hugh Burden in "Gossip from the Forest"

SPORTING CLUB and Blue Remembered Hills have all been outstanding productions. Gossip From The Forest was not one of his best...

Like so much of his work, Gossip From The Forest evokes a strong and moving atmosphere, particularly in the opening half hour...

ATV's series Jack On The Box has a TV Times entry which is just a teeny bit precious. The comic novelist eccentrically pursues his lost love Maggie through a series of six films.

The same company's Merryport ought to have been another work to relish since its makers also have impressive records: producer Denis Mitchell is renowned for Morning In The Streets and other documentaries...

Sure enough there was a sharp poignancy about their study of a moribund coastal town on the Solway Firth. But it was spoiled by Gosling's perceptive naivety...

As an investigation it lacked rigor, and as a portrait it lacked breath. It certainly had atmosphere but who, given Mitchell's camera and Mitchell's budget...

Granada's third offering, This England, was a fascinating little programme about deaths in the long running soap opera Coronation Street and public

reactions to them. It would have been even better if it had allotted slightly less time to one character (Ernie Bishop) and slightly more to the others...

Doctors And Nurses takes the dramatically simple idea exploited in "Bugsy Malone" and transfers it to a hospital; the staff are all played by children.

We do not have the space here to go into all the baroque intricacies of the joke in which the surgeon in the operating theatre calls for "Spencer Wills clip!"

On the surface it is a meandering, undisciplined, discursive, episodic, indulgent, plaintive, pathetic self-pitying series but underneath all that it is profoundly self-satisfied.

Festival Hall

Gala Ballet Season by CLEMENT CRISP

The week of pirouettes and fountains which started on Monday at the Festival Hall might well pass itself off as "All you ever wanted to know about classical ballet and didn't like to ask your doctor." It is an ornate...

Miss van Hamel, whom we saw with American Ballet Theatre a couple of years ago, is a joy. She is the Odette of the evening, discreetly partnered by Kevin McKenzie, and her serene, creamy style argues an interpreter deserving of far better things than the surroundings in which she finds herself.

There was some glorious footage of English countryside with the bright and boxy aeroplanes - like something that had chattered in from an animated cartoon - in the foreground.

The common denominator is a fond and shared obsession and nothing makes for better television. Galina Samsova is seen as the Aurora of the evening, and also returns in her special version of Le Corsaire.



Martine van Hamel in "Tattooed Lady"

matched with Samsova, could not show a brightness of virtuosity that told of true classic understanding.

For the rest, Maina Gielgud Morishita and Tetsumaro Shimizu did what they did as powerful, idiomatic advocates of Boccaccio's bluebird couple and for the curried tosh of Bejart's Don Quixote's duet.

Theatre, was scheduled to open in November. The opening production of the new auditorium was to have been All's Well That Ends Well, with Judi Dench and Pezay Ashcroft. This has now been postponed.

Albert Hall/Radio 3

Carter, Lutoslawski

Monday night's three-part Prom was divided between three living composers from three different countries, Elliott Carter, Witold Lutoslawski and Michael Tippett. Tippett's 'A Child of our Time' dates from the war years; but the works by Carter and Lutoslawski were both recent, composed respectively three and four years ago.

Theater des Westens, Berlin

Wie einst im Mai

Following the box office success of Cabaret (an average thousand visitors a performance), Karl Vibach brought back the tradition of Berlin Operetta to the newly renovated and reopened Theater des Westens.

pressed the seeds of an hour of music into one quarter that time. Compressed: but for all that, given free rein to a poetical vision whose textures and dramatic curves are not difficult to perceive...

The final pages are perhaps still the most satisfying: from its highest point, the piece takes breath, falls in a series of powerful plunges, the last a dizzying dive into darkness and silence.

Open Air Theatre, Regents Park

Overruled

I rather wish that Christopher Biggins, who directs this arch trifle of Bernard Shaw, would issue his actors with loud hailer. There really seems little point in going as far as he does to contradict the natural setting...

Relations, Commission of the European Communities; Minister Kim Won Ki, Minister of Finance, Seoul; The Hon William Gleysteen Jr, United States Ambassador to Korea; Mr Choong Hoon Park, Chairman and President, Korean Traders Association; Professor Noritake Kobayashi, Keio University, Japan.

If you, or your company, have interests in Korea, 'Korea in the 1980's' will give you a most useful insight into the future of this important area.

For full details of the agenda, and registration procedure, complete and return the coupon below without delay.

What does the future hold for Korea? Will the development momentum be maintained? What are the problems and potentialities of doing business in Korea? What is the view of the world financial markets on the outlook for the developing industrial countries? These and many other questions will be examined and discussed at 'Korea in the 1980's' a conference to be arranged in Seoul on September 12 & 13, 1979 by the Financial Times and the Korean Traders Association.

Among the speakers will be Minister Hyon-Hwack Shin, Deputy Prime Minister and Minister of Economic Planning, Seoul; Sir Roy Denman KCB, CMG, Director General, External

To: The Financial Times Limited, Conference Organisation, 'KOREA IN THE 1980's', Bracken House, 10 Cannon Street, London EC4P 4BY.

Name \_\_\_\_\_ Company \_\_\_\_\_ Address \_\_\_\_\_ Tel: \_\_\_\_\_ A FINANCIAL TIMES CONFERENCE

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Wednesday August 1 1979

Sterling and the CBI

THE VERY SHARP correction in sterling in the currency markets yesterday actually provoked a small rally in the equity market.

The risks

It is notable, however, that the CBI in its economic assessment does not call for any change in Government policy to relieve present pressures; and indeed substantial relief still seems unlikely.

Fundamentals

These pressures will be much more easily sustained if the fight from the dollar now abates, and if credit demand in the UK—especially consumer credit demand—falls, as is expected, to a more normal level within the next few weeks.

Awkward corner

This is very important for sterling in particular, because the pound is peculiarly exposed to changes in sentiment about the dollar.

The leadership of India

INDIA IS an immense and diverse country which, somewhat like the United States, looks to its head of government for strong leadership.

Image

Jawaharlal Nehru was able to establish a sense of national identity beyond the particular claims of caste or religion by presiding the common cause of independence against the British.

Premier, tries to enlist the support of Mrs. Gandhi, his former opponent whom he has attempted to put on trial on criminal charges in an abuse of democratic procedures.

A favourable economic situation does not make up, however, for the absence of strong national leadership in a country now more conscious of its divisions than its success.

Successor

Though the representative of the Harijan community, he is not so partisan in support of his immediate followers as Mr. Charan Singh has been of the prosperous northern farming community from which he gets his strongest backing.



The Commonwealth conference risks becoming a dialogue of the deaf over Rhodesia. But there is some small room for hope...

Glimmers amid Lusaka's gloom

THE Commonwealth conference that opens here today will be dominated by Rhodesia, and the air of resigned gloom hanging over the majority of the delegations during their arrival here suggests there is little cause for optimism about the outcome.

Mr. Joshua Nkomo and Mr. Robert Mugabe. But the atmosphere into which Mrs. Thatcher flew on Monday night is hardly conducive to constructive dialogue, there is deep hostility to her personally.

different reality in Rhodesia than do the African states. Take one key example of this wide cultural and intellectual divide: the April elections.

By DAVID PALMER and MARTIN DICKSON in Lusaka

The root cause of this hostility can be traced to the simple fact that Mrs. Thatcher has always taken a far more favourable view of the Rhodesian internal settlement and of the April elections than did her predecessor, Mr. Callaghan.

But the Prime Minister has compounded her problems by a series of public utterances which have created great antipathy in Africa. The most important of these was her recent statement in Australia that she very much doubted whether the British Parliament would renew Rhodesian sanctions in November.

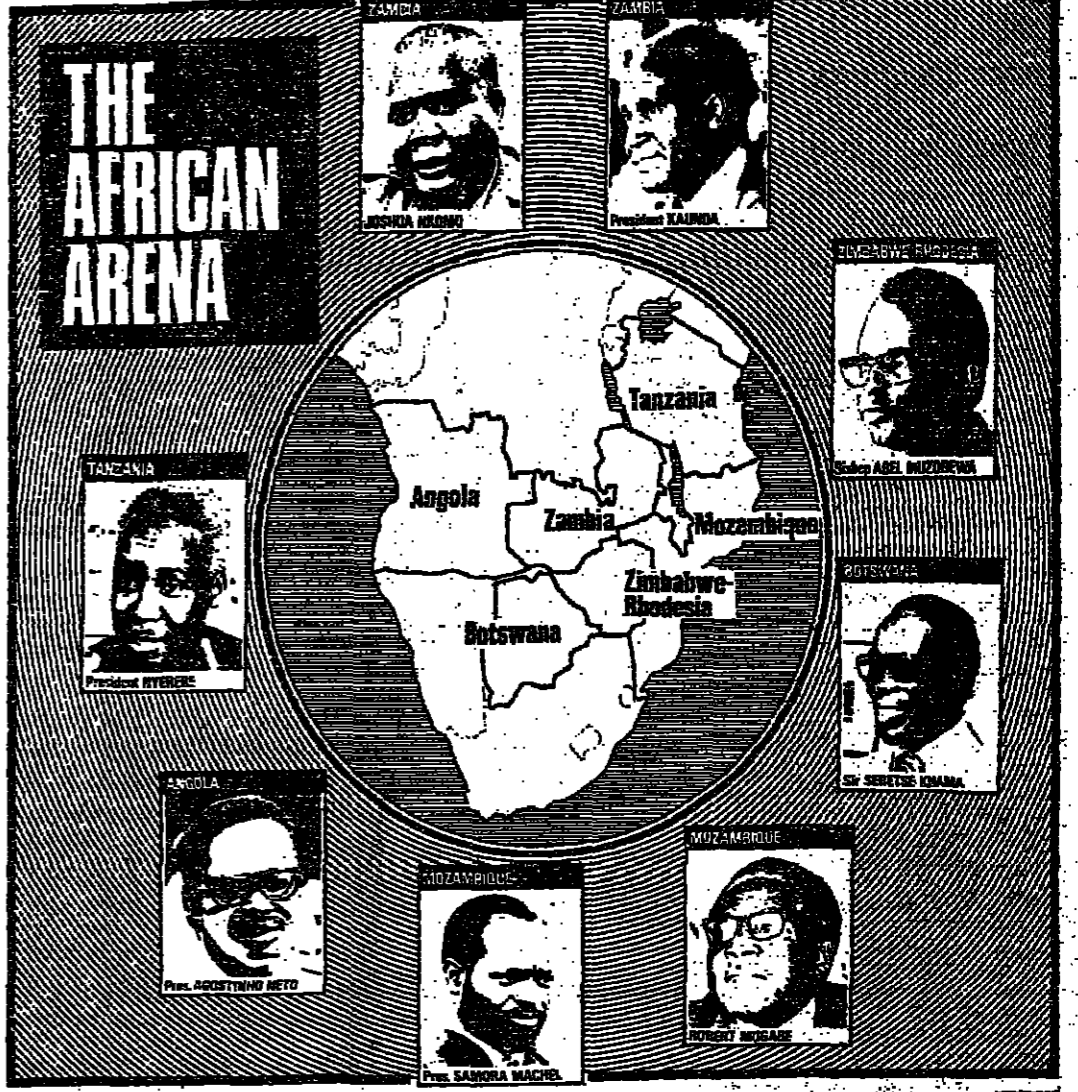
On an even more basic level than this, other remarks by the Prime Minister have led African leaders to the belief that Mrs. Thatcher, more than any other British Prime Minister over the past two decades, is unsympathetic to their problems, to their aspirations and to their fears.

It will be a dangerous atmosphere, for Mrs. Thatcher has as strong a didactic streak in her as the Africans. The result could be a mutual attempt to educate the other in the realities of life which might merely end in mutual incomprehension and raised tempers.

went on record as saying that the six principles which have formed the basis of British policy since UDI had now been met. Mrs. Thatcher has made a number of acid comments comparing the fairness of the electoral process in Rhodesia with the lack of democracy, as she defines it, elsewhere in Africa.

Seen from Africa, and the perspective of men who have been fighting for 20 years for the liberation of Rhodesia, the elections were a carefully stage-managed fraud. The constitution under which they were held was designed to retain white hands on the levers of power.

In the African view, it was out of the question for the Patriotic Front to accept the Rhodesian invitation to lay down arms and take part in the elections. As they see it, it is the "freedom fighters" who forced Mr. Smith to make



concessions. The war must go on until he agrees to a genuine majority rule settlement which meets their definition of "free and fair." "Freedom" means to African leaders, liberation from white colonial rule.

softening in the Lagos Government's headline stance. Only hours after Mr. Fraser's departure, the Nigerians moved against BP.

Smith is still wielding far more power behind the scenes in Salisbury than had earlier been thought, particularly in the conduct of the war.

The real only solution to the Rhodesian problem is one which will also bring an end to the war. That would require the acceptance of all or most of the five front-line states, one or both of the Patriotic Front leaders, almost certainly the Nigerians and of the regime in Salisbury.

The survival of the Commonwealth: The Queen's tour of the Commonwealth states, ending with a rapturous reception in Lusaka, has once again illustrated the links (tying Britain's Head of State (as opposed to Britain's Government) to the Commonwealth) to each other.

The leaders of all these states need a settlement—but that does not mean that making the guerrillas operate, are being devastated by the conflict with Rhodesia.

His capital city has less than 100 miles from the Rhodesian border, an estimated 12,000 of Joshua Nkomo's guerrillas are living in and off his country; the shops are without many basic commodities; the economy is lurching from crisis to crisis and Zambia is dangerously dependent on Rhodesia for its vital railway import and export routes.

London and Washington, existing doubts about Muzorewa's political capabilities have increased since his visit to the U.S. and Britain last month. In June he was being talked of as the instrument by which the UK Government could bring about changes inside Rhodesia, notably by persuading his Cabinet and country that the present constitution was unacceptable to world opinion.

As Mrs. Thatcher will find, it presents a very different view from that of the last Commonwealth conference venue—London.

MEN AND MATTERS

Weeks takes the cake

Sir Hugh Weeks, now aged 73, was the star of yesterday's birthday celebration for 21 years of the CBI's industrial trends survey.

companies, for fear the forecasts of expected change would become self-fulfilling. He also pointed out that over the years the survey had proved most accurate in its forecasts of investment trends.

Rough reportage

The philosophical attitude of American financiers to straightforward attacks on their professional integrity never ceases to surprise me. Articles that would leave British counterparts shouting hoarsely for their libel lawyers seem to leave them unmoved.

The latest edition of the U.S. magazine Institutions Investor carries a story on the "mid-life crisis" of security analysts. It puts the finger in no uncertain way on Peter Marcus, who fell from the top position in his New York stockbroking firm Paine Webber/Mitchell Hutchins after six consecutive years as No. 1.

Iona touchdown

There is a mystery about the fate of Iona since Sir Hugh Fraser paid £1.5m to buy the Hebridean island for the nation two months ago.

A sale condition, passed on by the Duke of Argyll from the islanders themselves, was it should on no account be administered by the National Trust. It seems Iona feared being turned into some enormous museum by the Trust.

Word in the ear

There is a resurgence of the Victorian custom of listening to books being read aloud after dinner. But nowadays, the readings are from a tape recorder.

Spitting distance

Glasgow Central Station has rarely been a place for festivity and the mood in the city is even more dour than usual at the moment.

In for lunch

A reader tells me that he approached a girl assistant in a Basingstoke shop, after waiting for some time to be served.

Observer

"I'd planned to have lunch. But these days I have to have some relief."



When you've once known a reasonable standard and have saved for your retirement, what can you do when inflation makes a mockery of all your careful planning?

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UK COMPANY NEWS

Lex 42% ahead and confident for year

PROGRESS continued for Lex Service Group in the first half of 1978 with taxable profit climbing 42 per cent from £5.37m to £11.89m.

HIGHLIGHTS

Yesterday brought a sharp shakeout in sterling and Lex looks at what may happen next on the currency front against a background of a gloomier industrial picture as painted by the latest CBI industrial trends survey.

However, general expectations for the passenger car market suggest that new car registrations, running at an annualised 1.75m, might be lower in the second half with a consequential effect on Lex's passenger car businesses.

Table with 2 columns: 1978, 1977. Rows include Sales, Operating profit, Profit before tax, Tax, Net profit, Dividends, Retained.

Volvo continues to make a good deal of the running at Lex and profits are slightly over recent market expectations.

Hirst and Mallinson expands 28% to £160,400 midway

PRE-TAX PROFITS of Hirst and Mallinson, the catering equipment distribution and textile group, rose 28 per cent from £125,100 to £160,400 in the 27 weeks to May 5, 1979.

programme has been very successful. In removals, the group was hit by the transport strike and while domestic sales show an improving trend, there is no sign of any upturn in overseas shipping.

Hill Samuel attacked over SA

THE BOARD of Hill Samuel, the City merchant bank, faced a barrage of criticism yesterday from campaigners protesting at the bank's involvement in South Africa.

organisation at the meeting. He told the Board that morality should be an important consideration in making investments, and asked whether Hill Samuel had been concerned with any loans for Namibia.

AUDREY HOUSE Ely Place, London EC1 46,000sq.ft. of Air-conditioned Offices To Let

Taylor Woodrow falls to £7.6m at halfway stage

ON TOTAL turnover up £3m at £196m pre-tax profits of Taylor Woodrow, the builder and civil engineering contractor, fell from £3.09m to £7.6m in the half year to June 30, 1978.

But the directors point out that the pre-tax profits figures are not directly comparable because of the change of status of two companies. Taylor Woodrow of Nigeria and Taymech Nigeria which were subsidiaries in 1977 are now associated companies.

DIVIDENDS ANNOUNCED

Table with 4 columns: Company, Current payment, Date of payment, Carried over, Total of last year.

Dividends shown pence per share net except where otherwise stated. \* Equivalent after allowing for scrip issues. † Malaysian S gross throughout. ‡ Including 0.2804p Supplementary. § Sp total forecast.

Vantona rises 20% at midway: second-half prospects promising

INCLUDING A first time contribution by Compton Webb, pre-tax profits of Vantona Group show a 20 per cent increase at £4.02m for the six months to July 1, 1979.

Capital expenditure, as part of a three year plan, was in excess of £3m in the first six months.

Fully diluted earnings are shown to have risen from 5.5p to 9.1p on capital enlarged by the acquisition of Compton Webb, which the directors describe as providing a satisfactory contribution to profits.

industry trend but the real rate of organic growth within an overall rise of a fifth at the pre-tax level is obscured by an unquantified first time contribution from Compton Webb.

Portsmouth Sunderland rises to £0.97m in first quarter

TAXABLE PROFITS of Portsmouth and Sunderland Newspapers expanded from £692,000 to £967,000 for the 13 weeks to June 30, 1979, on increased turnover of £4.35m, against £3.5m.

year. Mr. W. Gibson Briggart, chairman of Wheway Watson Holdings, told the annual meeting.

On a CCA basis, pre-tax profits were £722,000, and earnings are given as 2.5p.

FOR THE first half of 1979, gross income of City Offices Company improved from £667,797 to £845,563 and pre-tax profit rose from £354,930 to £675,420.

Grindlays hit by strength of £

WITH Grindlays Bank, its main subsidiary, hit by the strength of sterling, taxable profits of Grindlays Holdings fell from £19m to £16.2m in the half year to June 30, 1979.

The bank's directors say that the strong £ cost the group about £2.9m in profits. They add that the uncertainty of exchange rates and signs of recessionary problems for world trade make it difficult to forecast a second half, but they say it is unlikely that profit for the year will be as high as 1978.

Tax on the profits of Grindlays Holdings amounts to £3.37m, against £8.06m. After minorities of £3.93m (£4.97m) and an extraordinary credit of £483,000 last time the attributable profit is down from £3.43m to £3.81m.

Directors of the bank say that in the first half specific provisions for doubtful debts, after bringing back provisions no longer required, were at a much reduced level.

Tax relief brought forward from earlier years has been used to offset UK taxable profits, and this benefit will continue for part of the second half.

comment

Grindlays share price has been falling ahead of the interim results and the shares slipped another 5p to 101p after the news, giving a 14p loss over the past week.

ISSUE NEWS Yearlings rise to 12 1/2%

The coupon rate on this week's batch of local authority yearling bonds is up from 12 1/2 per cent to 12 3/4 per cent. The bonds are dated August 8, 1980, and issued at par.

shares representing approximately 85.51 per cent of 7,761,666 new shares offered, giving a 14p loss over the past week.

MIDLAND BANK STATISTICS

Statistics compiled by Midland Bank show that the amount of "new money" raised by the issue of marketable securities in the UK in July was £61.5m, less than half the June total of £153.9m.

HIGHLAND DISTILLERIES

Highland Distilleries announces that in connection with the rights issue of 10,235,000 ordinary shares at 88p, each acceptance has been received in respect of 8,724,504 shares or 85.9 per cent.

STYLO

Stylo Shoes announced that acceptances have been received in respect of about 88.3 per cent of the 1,660,512 new ordinary shares and 100 per cent of the new management shares offered by way of rights to ordinary and management shareholders respectively.

HARGREAVES GP

Hargreaves Group announces that acceptances have been received for 7,617,627 ordinary shares at 88p.

ROSGILL HOLDINGS LIMITED Results for the 52 weeks ended 26th May, 1979

NatWest Registrars Department National Westminster Bank Limited has been appointed Registrar of

Equity & Law Life Assurance Society Limited All documents for registration and correspondence should in future be sent to: National Westminster Bank Limited Registrar's Department PO Box No 82 37 Broad Street Bristol BS99 7NH

"Our confidence in the future of our industry is as strong as ever and we shall continue to expand."

Extract from Mr. N. C. N. Housden's statement to shareholders In the year 1978/79, in spite of disruption to supplies, Trading Profit increased by 23% and Net Profit before Tax by 15% - both new records. These results have come from improvements in all areas of the Group and stem largely from our continuing policy of modernising and developing our existing businesses.

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THE NEW THROMGORTON TRUST LTD. Capital Loan Stock Valuation - July 31st, 1979 The Net Asset Value per £1 of Capital Loan Stock is 185.19p. Securities valued at middle market prices.

ARLINGTON MOTOR HOLDINGS COMMERCIAL PASSENGER VEHICLES - CAR SALES - SERVICING - AUCTIONS CONTRACT HIRE & LEASING - BODY BUILDING - HIRE PURCHASE FINANCE

UK COMPANY NEWS

NEWS ANALYSIS—WELLMAN DEFENCE
A chance to decide: Redman or Indiana

BY RAY MAUGHAN

A COMMON takeover tactic to bid for a business when its profits are temporarily down... Redman Hercules International is bidding 65p per share or £7.5m for Wellman Engineering Corporation...

Pratt declines at halfway

TAXABLE PROFITS of F Pratt Engineering Corporation fell from a restated £522,000 to £388,000 in the half-year to April 30, 1979...

BOARD MEETINGS

The following companies have notified dates of Board meetings to the Stock Exchange...

Table with columns for company names and meeting dates. Includes: Applaryard, Royal Insurance, Smith and Nephew, etc.

Grindlays Bank S.A.

From August 1st 1979 Banque Grindlay Ottomane changes its name to Grindlays Bank S.A.

Grindlays Bank S.A. has from August 1st acquired 4 additional branches and now has 15 branches in France, Monaco and Switzerland...



Grindlays Bank S.A.

Head Office: 7, Rue Meyerbeer, 75428 Paris Cedex 09. Tel: 266 6222 Telex: 210026

Branches in Paris, Aix-En-Provence, Cannes, Grasse, Lille, Lyon, Marseille, Nice, Toulon, Strasbourg, Monte Carlo, Geneva and Zurich.

CH Industrials makes encouraging start

THE ENCOURAGING trend in profits of C.H. Industrials which became evident at the beginning of its current year is continuing...

It should also benefit from the introduction of the new TR7 soft top, he adds. Prospects for this division remain highly dependent on the success of its principal customer...

Table titled 'Courts (Furnishers) Limited' showing financial data for Year ended, Turnover, Profit before Taxation, Profit after Taxation.

In the decorative trim division, the production problems of the motor trim activities have been largely overcome and an improving level of profitability is expected throughout the year...

Advertisement for Beneficial Overseas Finance N.V. featuring 9 1/2% Notes Due July 15, 1987, Unconditionally Guaranteed as to Payment of Principal, Premium, if any, and Interest by Beneficial Corporation.

Advertisement for Manufacturers Hanover Corporation & Subsidiaries, including a consolidated statement of condition for June 30, 1979, listing assets, liabilities, and shareholders' equity.



CURRENCIES, MONEY and GOLD

Pound slumps

STERLING RECORDED its biggest one-day fall since January 1978 in currency markets yesterday as a combination of factors prompted a 6.5c fall against the dollar to \$2.2970-\$2.2950. It was also weak against other major currencies...

The dollar finished at DM 1.9335 against DM 1.9325, but had been quoted higher at DM 1.9490 earlier in the day. Similarly against the Swiss franc it closed at SfrFr 1.6890 from SfrFr 1.6975 after a high for the day of SfrFr 1.6980. So although firmer, the dollar finished some way below its best levels. On Bank of England figures, its trade-weighted index rose to 94.6 from 94.3.

THE POUND SPOT AND FORWARD

Table with columns: Day's spread, Close, One month, % p.a., Three months, % p.a. for various currencies like U.S., Canada, Netherlands, Belgium, Denmark, Ireland, W. Ger., Portugal, Spain, Italy, Norway, France, Sweden, Japan, Austria, Switzerland.

THE DOLLAR SPOT AND FORWARD

Table with columns: Day's spread, Close, One month, % p.a., Three months, % p.a. for various currencies like U.K., Ireland, Canada, Netherlands, Belgium, Denmark, W. Ger., Portugal, Spain, Italy, Norway, France, Sweden, Japan, Austria, Switzerland, U.K., Ireland and Canada are quoted in U.S. currency.

CURRENCY MOVEMENTS

Table showing currency movements for July 31, including Sterling, U.S. dollar, Canadian dollar, Austrian schilling, Belgian franc, Danish krone, Deutsche Mark, Swiss franc, French franc, Lira, Yen, and Sth. African Rand.

CURRENCY RATES

Table showing currency rates for July 30, including Sterling, U.S. dollar, Canadian dollar, Austrian schilling, Belgian franc, Danish krone, Deutsche Mark, Swiss franc, French franc, Lira, Yen, and Sth. African Rand.

OTHER MARKETS

Table showing other markets for July 31, including Argentina peso, Australia dollar, Brazil cruzeiro, Canadian dollar, Greek drachma, Hong Kong dollar, Kuwait dinar, Luxembourg franc, Maldivian rufiyaa, New Zealand dollar, Saudi Arab. riyal, Singapore dollar, Sth. African Rand, Austria, Denmark, Germany, Italy, Netherlands, Portugal, Spain, Switzerland, Yugoslavia, and Zimbabwe.

EMS EUROPEAN CURRENCY UNIT RATES

Table showing EMS European Currency Unit rates for various currencies like Belgian franc, Danish krone, German mark, French franc, Dutch guilder, Irish punt, Italian lira, and Luxembourg franc.

EXCHANGE CROSS-RATES

Table showing exchange cross-rates for July 31, including Pound Sterling, U.S. Dollar, Deutschmark, Japanese Yen, French Franc, Swiss Franc, Dutch Guilder, Italian Lira, Canadian Dollar, and Belgian Franc.

EURO-CURRENCY INTEREST RATES

Table showing Euro-currency interest rates for July 31, including Sterling, U.S. Dollar, Canadian Dollar, Dutch Guilder, Swiss Franc, West German Mark, French Franc, Italian Lira, Asian \$, and Japanese Yen.

INTERNATIONAL CAPITAL MARKETS

New York Fed adds reserves

The New York Federal Reserve Bank injected liquidity into the market yesterday by making overnight repurchase agreements. Federal funds were trading at 10 1/8 per cent at the time, and uncertainty still remained as to the likely Fed target rate.

Slight fall

Trading in the London bullion market remained very volatile yesterday, and gold closed \$21 an ounce down at \$298 1/2-299. After Monday's sharp fall, the metal opened at \$294.295 with a low of \$294.295. These lower levels attracted a good deal of interest and through the day gold rose over \$4. However trading remained very volatile and reflected the current uncertainty in foreign exchange markets.

UK MONEY MARKET

Moderate help

Bank of England intervention, as measured by the overnight lending rate, was moderate (since June 14, 1979). Day-to-day credit was in short supply in the London money market yesterday, and the authorities gave assistance by buying a small amount of Treasury bills and a small amount of corporation bonds.

MONETARY RATES

Table showing monetary rates for July 31, including Gold Bullion (fine ounce), Gold Coins, Domestic Kruggerand, New Sovereigns, Old Sovereigns, Gold Coins, International Kruggerand, New Sovereigns, Old Sovereigns, and \$5 Eagles.

LONDON MONEY RATES

Table showing London money rates for July 31, including Overnight, 2 days, 7 days, 14 days, 28 days, 1 month, 3 months, 6 months, and 12 months.

NEW YORK

Table showing New York money rates for July 31, including Prime Rate, Fed Funds, Treasury Bills (28-week), and GERMANY, FRANCE, and JAPAN.

Advertisement for Lehman Brothers Kuhn Loeb, European Coal and Steel Community, 9 3/4% Bonds, Due August 1, 1999. Includes company name, address, and list of agents.

Advertisement for Saudi International Bank (AL-BANK AL-SAUDI AL-ALAMI LIMITED). Includes bank name, capital, assets, and contact information.

INTERNATIONAL COMPANIES and FINANCE

NORTH AMERICAN NEWS

Flintkote agrees to \$375m offer

STAMFORD — Flintkote the building materials group and Kohlberg Kravis Roberts (KKR) have agreed in principle for a group of investors, through a corporation to be organized by KKR, to acquire Flintkote for \$32 a share cash.

At June 30, Flintkote had about 7.2m shares of common outstanding which puts an immediate value of \$374.4m on the bid. An additional 146,500 shares are issuable on conversion of Flintkote's outstanding convertible preferred stock.

The acquisition is subject to arrangement of necessary financing and disposition of certain assets by Flintkote. Flintkote said KKR has had a favourable preliminary indication from a major financial institution that it would provide a significant portion of the financing.

The transaction is also subject to completion of a definitive agreement, filings with regulatory bodies, and approval of the agreement by Flintkote's Board and shareholders.

KKR will receive certain minimum fees from Flintkote which will be reimbursed by the investor group on completion of the transaction.

Flintkote makes basic materials and products for the building and construction industries in the U.S. and Canada.

KKR is a New York-based investment firm which, with affiliates, is a principal investor in a number of industrial companies.

A group headed by KKR recently completed the acquisition of Worldwide Industries for \$275.5m.

Further cutbacks may hit Liggett's second half profit

BY OUR FINANCIAL STAFF

SECOND QUARTER net income of the cigarette, tobacco, drinks and pet food concern Liggett Group was hurt by an after-tax charge of \$3.6m or 42 cents a share as a result of cutbacks associated with a planned consolidation of the group's domestic cigarette operations.

The group's net income shows a decline from \$23.8m or \$2.58 a share to \$19.9m or \$2.29 a share in the current second quarter, compared with \$8.5m or 89 cents last time.

For the first six months, Liggett turned in net income of \$19.9m or \$2.29 a share compared with \$33m or \$3.55 a share. First half sales advanced from \$482.5m to \$510.1m.

Cigarette sales in the quarter continued to decline but operating income was higher. Sales of chewing and smoking tobacco rose slightly, but operating income was lower.

Mr. Raymond J. Mulligan, president, said that sales and operating income from the company's main drinks brands were significantly lower due to reduced buying by the trade in resistance to price increases.

Another major tobacco company, U.S. Tobacco, had second quarter profit of \$7.6m or 88 cents a share compared with \$8.57m or 78 cents, from sales of \$56.93m against \$51.75m.

First half net income of \$15.47m or \$1.74 a share was also a record and compared with \$13.65m or \$1.55 last time. Sales for the six months rose from \$101.23m to \$112.05m.

Quebec has threatened to expropriate Asbestos Corporation if it cannot reach agreement with General Dynamics on terms of a takeover.

Asbestos loses appeal on State takeover

BY DAVID LASCELLES IN NEW YORK

MONTREAL — Asbestos Corporation has lost a bid for a temporary injunction to block its possible expropriation by the Quebec government.

Justice Albert Mayrand of the Quebec Court of Appeals refused the injunction, citing a legal requirement that three judges preside in such a case.

Asbestos Corporation which is 54.6 per cent owned by General Dynamics, lost its bid for a permanent injunction in Superior Court last week.

It appealed to Justice Mayrand while the Full Appeals Court is adjourned for the summer. The company has said it will appeal to the Full Appeals Court when the court resumes deliberations in September.

Quebec has threatened to expropriate Asbestos Corporation if it cannot reach agreement with General Dynamics on terms of a takeover.

Dillon share split

Dillon Companies, the retail group, pushed earnings up by 21 per cent to \$33.6m, or from \$1.72 to \$2.08 in the year to June 30, on sales of \$1.79bn against \$1.47bn.

Conoco spending

U.S. Steel lifts earnings but sees gloomy outlook

BY DAVID LASCELLES IN NEW YORK

U.S. STEEL, the largest U.S. steelmaker, has notched up its fifth consecutive quarterly rise in profits.

In the quarter, U.S. Steel produced 8.5m tons, up slightly on last year's 8.4m, and shipped 6m tons compared to the previous year's 5.4m.

Mr. Roderick also indicated that the immediate business prospects were gloomy. The steel order rate has fallen off "with no immediate signs of an upturn," he said, adding that he is concerned about the shipments level for the fourth quarter.

Mr. Roderick warned that as demand softens in the second half of the year, it is even more imperative that the U.S. Anti-Dumping Laws be vigorously enforced.

INTERNATIONAL CAPITAL MARKETS

DM bond yields move lower

THE WORLD BANK is arranging a DM 200m private placement with a bullet maturity of 10 years through Deutsche Bank.

Foreign DM bonds were firm yesterday while good demand for domestic DM issues allowed the Bundesbank to sell DM 20m worth of paper.

Genossenschaftliche Zentralbank Aktiengesellschaft

Vienna

U.S. \$40,000,000 Floating Rate Notes Due 1989

In accordance with the provisions of the Notes, notice is hereby given that for the initial three month interest period from 1st August, 1979 to 1st November, 1979 the Notes will carry an Interest Rate of 11 1/2% per annum.

Credit Suisse First Boston Limited Agent Bank

NOTICE

To the holders of the Floating Rate London Dollar Certificates of Deposit due August, 1982, of:

DOW BANKING CORPORATION

108, Fenchurch Street, London, EC3.

W. R. Grace sees sharp gain

NEW YORK—W. R. Grace, the chemicals, food, oil and paper group, expects 1979 earnings to rise as much as 20 per cent to \$210m or \$4.80 a share despite a \$15m for 30 cents a share loss from the now completed sale of its Italian pasta business.

Mr. Charles H. Erhart, Jr., executive vice-president. Total sales for the year are expected to top the \$5bn mark for the first time. Sales in 1979 were \$4.31bn.

Grace's 99 per cent interest in Barilla SPA, one of the world's largest pasta producers, was sold for \$65m to Finbarilla, a joint Italian-Swiss holding company headed by Italian industrialist, Sig. Pietro Barilla.

The Barilla family had sold the pasta company to Grace in 1971. The sale of Barilla is the last in a series of investments of Grace's products businesses.

The loss from the sale of Barilla will be reported in the third quarter, causing earnings for the period to be "definitely down" from last year's \$43m or \$1.07 a share.

Earnings projections for the year take into account a mild recession lasting through the fourth quarter. The specialty chemicals and natural resources businesses are expected to do well despite the economic downturn.

Grace had revised its earnings projections "slightly upward" because results for the first half were better than expected.

AMERICAN QUARTERLIES

Table with columns for company names (AMERICAN GENERAL INSURANCE, GLOBAL MARINE, TON COMPAN, RAMADAY INC, RAMADAY INS, ST PAUL COMPANIES, STEEL OF CANADA, SOUTHERN COMPANY, TEXAS GAS TRANSMISSION, TEXAS UTILITIES, TWENTIETH CENTURY-FOX FILM, WILLIAMS COMPANIES) and financial data for 1979 and 1978.

Table with columns for company names (ALLEN HARVEY & ROSS INVESTMENT MANAGEMENT LTD., KRUNG THAI (CAYMAN) LIMITED, KRUNG THAI BANK LIMITED) and financial data for 1979 and 1978.

AMERICAN QUARTERLIES

Table with columns for company names (ALLEN HARVEY & ROSS INVESTMENT MANAGEMENT LTD., KRUNG THAI (CAYMAN) LIMITED, KRUNG THAI BANK LIMITED) and financial data for 1979 and 1978.

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FT INTERNATIONAL BOND SERVICE

Large table listing international bond issues with columns for company name, issue type, interest rate, and dates.

YEN STRAIGHTS

Advertisement for Krung Thai (Cayman) Limited and Krung Thai Bank Limited, featuring a logo and contact information.

Advertisement for Allied Irish Banks Ltd. Capitalisation Issue, including details on the bank's operations and share offerings.

Nederhorst liquidators find new owners

By Charles Satchler in Amsterdam... THE Hollandsche Beton Groep (HBG), the Dutch construction concern, has agreed to take over a large part of the failed Nederhorst building group.

Most of the Multibouw division, which is involved mainly in housing construction, will be taken over by the Van Der Vorm-Baeyens Group of Rotterdam while three of the companies will be acquired by their former owners or the present management.

OGEM and the Dutch Government first drew up a rescue plan for Nederhorst in 1979 when mounting losses threatened its existence.

Renault financing... Renault unit, Ste. Financiere de Fonderie, is issuing a FF 200m floating rate note on the Paris bourse.

Matra takes major stake in telephone industry

By David White in Paris

THE FRENCH Matra group is to take an important role in the European telephone equipment industry by acquiring control of the privately-owned Depapee concern.

Matra gave no details of its agreement, reached in collaboration with Banque de l'Indochine et de Suez. The move marks the second stage in Matra's effort to build a homogeneous communications division, with a broad production and marketing base.

Strike hits Aer Lingus earnings

By Stewart Dalby in Dublin

AER LINGUS, the Irish state owned airline, earned a net profit of IRE4.02m (\$8.26m) in the year ended March 1979 after charging depreciation of IRE7.09m and interest of IRE3.38m.

The results mean that despite higher turnover (IRE190m) there has been a drop in net profit since 1977-1978 when the figure achieved was £4.62m in sterling.

Presenting the annual general report yesterday, Mr.

Patrick Hayes, chairman, said that while the net profit might appear reasonably satisfactory a 54-day strike early in 1978 had prevented the airline from reaching the much higher level of profit it needed and which it could have managed.

Had it not been for the strike which consisted mostly of groundstaff - the net profit would have been closer to £8m in sterling. Losses seem to have occurred on the Atlantic route last year despite the fact the airline carried a record number of 2.5m passengers which was an increase of 11 per cent over the previous year.

Pirelli gets go-ahead for restructuring programme

By Paul Beits in Rome

THE ITALIAN interministerial Committee for Industrial Planning gave the go-ahead yesterday to a L650m (\$7.9m) financial restructuring programme for Industrie Pirelli, the Italian operating company in the Dunlop-Pirelli Union.

The operation will involve the increase of the company's capital from L100bn to L170bn and the consolidation of some L100bn of Industrie Pirelli's debts at an interest rate of about 7.5 per cent.

The capital increase will see the injection of some L40bn from a consortium of leading Italian banks led by the Milan-based medium term credit institute, Mediobanca. The balance of L25bn will be subscribed by Pirelli.

This is a variation on the original financial restructuring proposals for Industrie Pirelli which envisaged an increase of the company's capital to L165bn or L10bn less than in the revised plan.

Norwegian chemical group lifts profit

By Fay Gjester in Oslo

DYNO INDUSTRIER, Norwegian manufacturers of chemicals and explosives, reports higher turnover and slightly improved profits during the first half of this year. Turnover increased by Nkr 104m to Nkr 739m (\$146m), though more than half the rise reflected the acquisition of new companies. Export sales rose more sharply than sales to the Norwegian market.

Advance by Sumitomo Metal

By Yoko Shibata in Tokyo

TOKYO - Sumitomo Metal Industries, the Japanese steel concern, raised its consolidated net income by 165 per cent in the year to March 31, to Y17.17bn (\$80m), from Y6.47bn the previous year. Sales rose to Y1,070bn (\$50n), from Y1,010bn.

Sumitomo attributed the better performance to a sharp recovery in steel prices on domestic and overseas markets, offsetting exchange losses stemming from the yen's appreciation against the U.S. dollar.

The company is unable to predict its consolidated business result for the current year, because of uncertain factors including crude oil price increases, foreign exchange fluctuations, and a higher official discount rate in Japan.

But the company expects income before tax and special items in the first-half, up to September 30 to come to at least Y40bn, compared with Y35.67bn in the whole 1978 business year.

Domestic sales lift Matsushita

By Yoko Shibata in Tokyo

MATSUSHITA Electric Industrial, the world's largest manufacturer of consumer electronic and electric products, raised its consolidated net profits by 4 per cent to Y24.59bn (\$1.14n) in the second quarter, on sales up 7 per cent to Y576.64bn (\$2.7bn). The totals are records for any quarter.

The gain in profits and sales was chiefly the result of brisk domestic sales of high value-added products which more or less covered a substantial decline in exports, of 10 per cent to Y130,810m.

Consolidated net profits for the first six months, to May 20, gained 4 per cent to Y44,04bn on consolidated sales of Y1,105bn, up 7 per cent over a year earlier. Per share profit for the first six months were Y37.8, compared with Y36.5.

A sizeable gain in exports of video tape recorders (VTR) failed to offset the drop in colour television set shipments, brought about by intensified trade restrictions and currency fluctuations.

Exports in the first six months dropped by 10 per cent to Y256.53bn, despite strengthening production of parts and products for its 29 overseas manufacturing companies. Only four overseas sales and manufacturing subsidiaries were included in Matsushita's consolidated results.

The number of consolidated companies increased to 120, from 116 a year ago including 101 domestic consumer sales companies.

It was announced in late June that Matsushita had raised net profits at the parent company level in the first half by 17 per cent to Y30.84bn, on sales up 7.2 per cent to Y806.02bn.

Decline in interest rates aids Mitsubishi

By Richard C. Hanson in Tokyo

MITSUBISHI CORPORATION, Japan's largest trading company, raised its consolidated net income in the year to March 31 by 6.7 per cent to Y23.7bn (\$110m), but total trading transactions dipped 4.9 per cent to Y9,276bn (\$438n). The increase in income was mainly the result of a decline in net interest expense and in provisions for doubtful receivables.

Like the other major trading companies, Mitsubishi has been hit by a shrinkage in export and import business. Imports were down 12.6 per cent and exports 7.7 per cent, while business outside Japan was off 4.9 per cent.

Domestic sales increased slightly in volume and relative importance - up 0.8 per cent to 47.2 per cent of the total, from 44.5 per cent the previous year.

Most major product categories showed declines, with machinery (18.1 per cent of the total) down 2.4 per cent, fuels down 15.1 per cent (for a 15.9 per cent share) and foods off 2.5 per cent (14.8 per cent).

The drop in business arose principally from the falling value of the dollar against the yen over most of the fiscal year. Conversely, the subsequent decline in the value of the yen since late 1978 cut the margin of the sales drop.

Sales this year will probably rise to about the Y10,000bn level as a result of the depreciation of the yen.

Officials at the company, however, are predicting cautiously that overall net income will remain at last year's level.

On a non-consolidated basis, trading transactions declined 5.2 per cent to Y8,900bn - the second annual decline in a row - while net profit was up only a fraction to Y16.1bn.

Premium income up at Harel

By L. Daniel in Tel Aviv

HAREL, the Israeli insurance company which hitherto has concentrated entirely on life business, reports that it increased its premium income in 1978 by 150 per cent to IES5.5m (\$1.4m) and expects a similar growth rate this year.

Profits from life insurance business increased by 115 per cent to IEL1m last year, and its overall after-tax profit by 235 per cent to IEL6.2m helped by investment income.

Setback for SAAN

By Jim Jones in Johannesburg

SOUTH AFRICAN Associated Newspapers (SAAN) - the publisher of the Rand Daily Mail, Financial Mail, and Sunday Times - has seen its first half results set back by a combination of fuel, labour and newspaper cost increases.

In the six months to June 30 operating profits fell 39.4 per cent to R611,000 (\$727,000), from R1,011m in the same period last year. This arose despite higher advertising revenue, which was the main contributor to an overall revenue increase.

Mr. Clive Kinsley, the managing director, expects enhanced advertising revenue in the second six months' trading period, with a resulting profit improvement. But although cover prices of the group's daily newspapers have been increased, thereby offsetting, to an extent, higher distribution and newspaper costs, the management has maintained the interim dividend at 2 cents, from earnings of 8 cents, against 1978 first-half earnings of 36.5 cents.

Last year, on second half earnings per share of 74.8 cents, an unchanged 25 cents final dividend was paid. With this year's unchanged interim dividend Johannesburg analysts feel that the final pay-out will be maintained.

Cheung Kong forecasts upturn

By Philip Bowring in Hong Kong

CHEUNG KONG (Holdings) a major Hong Kong property development group, reported a decline in first half profits, but forecast a significant increase for the full year. Because of a low completion rate, first-half earnings were only HK\$38.34m (US\$7.4m), against HK\$79.02m (US\$15.8m) in the same period of 1978.

The interim dividend reflects the confidence about the outcome for the year as a whole. It will be 18 cents, against 15 cents, on capital increased by a one-for-five bonus issue.

Meanwhile, Green Island Cement, a Cheung Kong associate and Hong Kong's sole cement manufacturer, was another beneficiary of the property and building boom. Its first-half profit more than doubled to HK\$43.9m, from HK\$18.9m, before extraordinary gains of HK\$80.8m, against HK\$3.4m. An interim dividend of 60 cents was recommended, three times the year earlier level - on capital increased by a one-for-five scrip issue.

Green Island expects the second-half to be even better than the first, pointing to a total of around HK\$100m for the year against HK\$43.6m.

Yen CD issue rise in June

TOKYO - Japanese banks belonging to the Federation of Bankers Associations issued yen-based negotiable certificates of deposits totalling Y250.50bn in June, increasing their outstanding balance of CD issues to Y707.90bn (equivalent to \$3.3bn), the Bank of Japan announced.

Of the total, City banks issued Y114.30bn, to increase their outstanding balance to Y453.10bn, local banks Y94.50bn, to Y158.20bn, trust banks Y16.20bn, to Y73.20bn, and long-term credit banks Y25.50bn, to Y43.40bn.

All of these securities having been sold, this announcement appears as a matter of record only.

Canadian National Railway Company U.S. \$150,000,000 Canadian National Railway Company (Wholly owned by the Government of Canada) 9.70% Sinking Fund Debentures Due 2004 Interest payable January 15 and July 15

NEW ISSUE US \$35,000,000 Texas International Airlines Capital N.V. Guaranteed Floating Rate Notes Due 1986 Unconditionally Guaranteed as to Payment of Principal and Interest by Texas International Airlines, Inc.

WORLD STOCK MARKETS

Companies and Markets

Wall St. improves 4.5 in active early trade

INVESTMENT DOLLAR Among the most active issues, American Telephone hardened...

Canada Markets remained in easier mood yesterday morning in a fair business. The Toronto Composite index relinquished 6.2...

Germany Share prices rallied from a weaker opening to finish mixed to firmer on balance after light dealings...

Closing prices and market reports were not available for this edition. Common Index gained 26 cents to \$59.05 and advances outnumbered declines...

Hong Kong Fresh local profit-taking at the outset of the session gathered pace on unconfirmed reports that the Government is considering...

Australia Lower London metal prices and a sharp reaction in the Gold price prompted profit-taking in the Minings sector...

Table with columns: Stock, July 30, July 27. Lists various stocks like Abbott Lab, Am International, etc.

Table with columns: Stock, July 30, July 27. Lists various stocks like Williams Co, Wacoam Elec, etc.

NOTES: Overseas prices shown below except where noted. Prices are stated without tax...

Table with columns: Stock, Price, Div. Yield. Lists stocks like AEG, Allianz, etc.

Table with columns: Stock, Price, Div. Yield. Lists stocks like Asahi Glass, Casio, etc.

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Indices

Table with columns: Index, July 30, July 27, High, Low. Lists indices like Industrial, Home Bldg, etc.

Table with columns: Index, July 27, July 20, July 15, Year ago (approx). Lists indices like Ind. Div. Yield, Ind. P/E Ratio, etc.

Table with columns: Index, July 30, July 27, High, Low. Lists indices like Industrial, Toronto Composite, etc.

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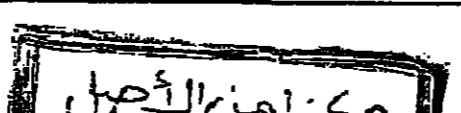
Table with columns: Index, July 30, July 27, High, Low. Lists indices like Industrial, Toronto Composite, etc.

Table with columns: Series, Vol., Last, Jan., Last, Apr., Last, Stock. Lists various series like ABN C, AKZ C, etc.

Table with columns: Bank, Rate. Lists banks like A.B.N. Bank, Allied Irish Bank, etc.

Table with columns: Stock, Price, Div. Yield. Lists stocks like AEG, Allianz, etc.

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Companies and Markets

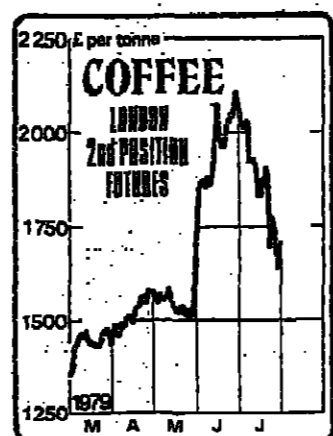
Wool price peak in Australia

SECURES JUST released by the Wool Council of Australia show that average auction prices in the second half of the 1978-79 season were the highest since the 1950-51 wool boom...

Coffee and cocoa surge higher as pound weakens

BY RICHARD MOONEY

LONDON'S LEADING "soft" commodity markets, which have been severely depressed recently by the firm yesterday by the sudden weakness of sterling...



Another possible influence suggested by some traders was support buying by the Bogota Group of Latin American coffee producers...

The September position on the London futures market has risen the 540 permissible daily limit by mid-afternoon and closed 573 up on the day at £1,403 a tonne.

On the raw sugar market, the October position ended the day £1.40 higher at £102.575 a tonne. This rise was encouraged, traders said by news from New York that the U.S. House of Representatives Rules Committee was considering clearing the way for action on pending sugar legislation.

UK zinc producer cuts price

By John Edwards, Commodities Editor

BRITISH ZINC producer, AM and S Europe, yesterday confirmed a cut in its official producer price, from \$445 to \$780 a tonne, in line with reductions already announced by several European smelters.

MALAYSIA

Conflicts of interests in palm oil industry

BY WONG SULONG IN KUALA LUMPUR

THE COLLAPSE of the marketing pact between Malaysia's palm oil growers and refiners, in the face of tight supply, has highlighted the need for a national strategy on the marketing of the country's second most important agricultural commodity.

collapsed in recent weeks and their members have had to pay the full Rotterdam price (plus the elements of freight and insurance) for their purchases. This can add up to as much as 300 ringgits (£40) premium per tonne, and local refiners say this puts them in a difficult position in relation to their overseas competitors.

while crude oil is given easy access. Refined Malaysian palm oil attracts a 14 per cent import duty in the EEC compared with 4 per cent for crude. There are fears that unless Malaysia makes its crude palm oil freely available to its traditional consumers overseas, these clients will switch to other edible oils.

Rubber demand rise forecast

By Our Commodities Staff CONSUMPTION of rubber, natural and synthetic, is expected to rise by 57 per cent during the next 10 years, according to the International Institute of Synthetic Rubber Producers. This would raise consumption to 18.8m tonnes a year.

U.S. wheat export curbs opposed

WASHINGTON—Mr. Thomas Foley, chairman of the U.S. House of Representatives agriculture committee, has asked members to join him in opposing amendments aimed at curbing wheat and rice exports which are expected to be brought up later this year.

Soviet wheat purchases in the fourth year of the grain supply agreement. "I would hope that we would meet the August 1 target for the 1980 wheat programme," he said.

farmer-owned reserve for 1980 crop wheat. The officials declined comment on rumours that the USSR would be allowed to buy up to 8m tonnes of wheat in the fourth year of the pact, and that a decision would be made on raising the limit for maize later this year.

Indonesia to buy rice from Philippines

JAKARTA—Indonesia has signed a contract to purchase 100,000 tonnes of rice from the Philippines, a spokesman for the Logistics Board said here yesterday.

U.S. silver purchase plan rejected

WASHINGTON—A House Appropriations subcommittee voted unanimously to recommend that the full committee reject a bill calling for acquisition of \$513m worth of silver.

Cheap hake imports banned

BRUSSELS—The EEC Commission has banned imports of frozen hake. It said the fish was coming in at less than Community prices and informed sources said the cheap imports were from Argentina.

Dutch sow more wheat

THE HAGUE—The area sown to winter wheat in the Netherlands rose to 125,000 hectares this year from 102,000 last year.

BRITISH COMMODITY MARKETS

Table with multiple columns for various commodities including Copper, Tin, Lead, Zinc, Nickel, Aluminium, and Wheat. Columns include 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

COCOA

Table for COCOA prices, including 'Cocoa beans' and 'Cocoa liquor' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

COFFEE

Table for COFFEE prices, including 'Arabica' and 'Robusta' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

GRAINS

Table for GRAINS prices, including 'Wheat', 'Barley', and 'Oats' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

SILVER

Table for SILVER prices, including 'Silver' and 'Gold' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

WOOL FUTURES

Table for WOOL FUTURES prices, including 'Wool' and 'Greasy' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

RUBBER

Table for RUBBER prices, including 'Latex' and 'Rubber' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

SOYABEAN MEAL

Table for SOYABEAN MEAL prices, including 'Meal' and 'Flour' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

SUGAR

Table for SUGAR prices, including 'Sugar' and 'Syrup' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

MEAT/VEGETABLES

Table for MEAT/VEGETABLES prices, including 'Meat' and 'Vegetables' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

COTTON

Table for COTTON prices, including 'Cotton' and 'Lint' with columns for 'a.m.', 'p.m.', 'Official', and 'Unofficial' prices.

AMERICAN MARKETS

Large table for AMERICAN MARKETS prices, including various commodities like 'Copper', 'Tin', 'Lead', 'Zinc', 'Nickel', 'Aluminium', 'Wheat', 'Soybean Meal', 'Sugar', 'Cotton', 'Rubber', 'Cocoa', 'Coffee', 'Grains', 'Silver', 'Gold', 'Wool', 'Meat/Vegetables', and 'Cotton'.

EUROPEAN MARKETS

Table for EUROPEAN MARKETS prices, including various commodities like 'Wheat', 'Soybean Meal', 'Sugar', 'Cotton', 'Rubber', 'Cocoa', 'Coffee', 'Grains', 'Silver', 'Gold', 'Wool', 'Meat/Vegetables', and 'Cotton'.

INDICES

Table for INDICES prices, including 'Dow Jones' and 'Financial Times' with columns for 'July', 'Month', and 'Year'.

MODY'S

Table for MODY'S prices, including 'Wool' and 'Cotton' with columns for 'July', 'Month', and 'Year'.

REUTERS

Table for REUTERS prices, including 'Wool' and 'Cotton' with columns for 'July', 'Month', and 'Year'.

INSURANCE BASE RATES

Table for INSURANCE BASE RATES, including 'Vanburgh Guaranteed' and 'Property Growth' with columns for '12 1/2%' and '11%'.

CORAL INDEX

Table for CORAL INDEX, including 'Coral' and 'Index' with columns for 'Close' and '492-457'.

YOUR OPPORTUNITY TO SELL IN KOREA

Industrial and Trade Fairs International Limited, the world's leading independent exhibition organisers, will be organising a series of major exhibitions in Korea, the new EXHIBITION CENTRE IN SEOUL, KOREA in the 80's.

The industries to be covered will include shipbuilding, packaging, chemicals, textile machinery and fishing. For full details please write to: Korean Exhibitions, Industrial and Trade Fairs International Ltd., Pacific House, Bream's Quay, Southampton, SO1 2ZG. Tel: 021-705 6702. Telex: 537073.

LONDON STOCK EXCHANGE

Leading equities a shade firmer after sluggish trade
Gilts and Golds easier on sterling and bullion price

Account Dealing Dates
Option
\*First Declara- Last Account Dealings Date
July 16 July 26 July 27 Aug. 6

once after having touched \$294 in the early trade. Australian mining issues, on the other hand, were featured by some bright spots following encouraging news on the Ashton diamond joint-venture.

firm immediately in front of the interim statement. Grindlays turned easier late in the day to a 1979 low of 101p following the disappointing first-half profits and the Board's cautious remarks about second-half prospects.

encountered selling and fell 6 to 185p, while fresh offerings ahead of the preliminary figures due shortly left Unitech down 2 more at 176p. Among the leaders, TREC edged up 4 to 420p and GEC 3 to 353p.

302p. Hays Wharf were quoted ex-rights at 125p, down 6, while the new nil-paid closed at 13p premium, after 14p.

Press suggestion of a possible bid for the company. Movements in Shippings were limited to a few pence either way. Common Brac, 195p, and J. Fisher, 190p, eased 3 and 2 respectively, but P and O Deferred hardened a penny to 100p. Buying interest was shown in Hersey Decks, 1 1/2 to the good at 25p.

LONDON TRADED OPTIONS table with columns for Option, Price, Volume, etc.

Grindlays dip late
Standing a couple of pence

Vantona better
Reflecting the increased interim earnings, Vantona rose 4 to 118p, while Stavert Zigzag advanced 6 to 72p in belated response to the favourable preliminary results.

Industries dull
A technical rally by the miscellaneous industrial majors left Boots 5 better at 182p.

Oil remain quiet
Quiet conditions persisted in the market for Oil shares and prices rarely strayed far from overnight closing levels.

FINANCIAL TIMES STOCK INDICES table with columns for July 31, July 20, July 27, July 28, July 29, July 30, and Year ago.

HIGHS AND LOWS table with columns for High, Low, and S.E. ACTIVITY.

DEALING DATES
First Declara- Last Account Dealings Date
July 16 July 26 July 27 Aug. 6

OPTIONS table with columns for Option, Price, Volume, etc.

ACTIVE STOCKS table with columns for Stock, Denomination, No. of shares, Closing price, etc.

Edmund Dell joins Halifax advertisement with a portrait of Edmund Dell and text describing his role as a director of Halifax Building Society.

NEW HIGHS AND LOWS FOR 1979
The following securities quoted in the London Stock Exchange have attained New Highs and Lows for 1979.

RECENT ISSUES table with columns for Issue, Price, and other details.

FIXED INTEREST STOCKS table with columns for Issue, Price, and other details.

ACTUARIES SHARE INDICES table with columns for Equity Groups, Index No., and other details.

AUTHORISED UNIT TRUSTS

Table listing various unit trusts and their performance metrics, including names like 'Mitsubishi Fund Managers Ltd.', 'NLA Unit Trust Managers Ltd.', and 'Prudential Portfolio Mgrs. Ltd.'.

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OFFSHORE AND OVERSEAS FUNDS

Table listing various offshore and overseas funds and their performance metrics, including names like 'Alexander Fund', 'Meyer Mitsun Ltd.', and 'King & Shaxson Mgrs.'.

INSURANCE AND PROPERTY BONDS

Table listing various insurance and property bonds and their performance metrics, including names like 'Abbeys Life Assurance Co. Ltd.', 'Lloyds Life Assurance Co. Ltd.', and 'Prudential Portfolio Mgrs. Ltd.'.

NOTES: Information regarding the accuracy and reliability of the data presented in the tables.

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INDUSTRIALS—Continued INSURANCE—Continued PROPERTY—Continued INVESTMENT TRUSTS—Cont. FINANCE, LAND—Continued

Table of stock prices for various industrial, insurance, property, investment trusts, and finance/land sectors. Columns include company names, stock prices, and other financial metrics.

LEISURE MOTORS, AIRCRAFT TRADES SHIPPING SOUTH AFRICANS TEXTILES

Table of stock prices for leisure, motors, aircraft trades, shipping, and South African companies. Includes sub-sections for 'Motors and Cycles' and 'Commercial Vehicles'.

SHOES AND LEATHER TOBACCO TRUSTS, FINANCE, LAND

Table of stock prices for shoes and leather, tobacco, trusts, finance, and land sectors.

NEWSPAPERS, PUBLISHERS PAPER, PRINTING ADVERTISING

Table of stock prices for newspapers, publishers, paper, printing, and advertising sectors.

PROPERTY TOBACCO TRUSTS, FINANCE, LAND

Table of stock prices for property, tobacco, trusts, finance, and land sectors.

PROPERTY TOBACCO TRUSTS, FINANCE, LAND

Table of stock prices for property, tobacco, trusts, finance, and land sectors.

PROPERTY TOBACCO TRUSTS, FINANCE, LAND

Table of stock prices for property, tobacco, trusts, finance, and land sectors.

PROPERTY TOBACCO TRUSTS, FINANCE, LAND

Table of stock prices for property, tobacco, trusts, finance, and land sectors.



DAIWA SECURITIES

MINES—Continued AUSTRALIAN

Table of stock prices for Australian mines. Columns include company names, stock prices, and other financial metrics.

TINS

Table of stock prices for tins. Columns include company names, stock prices, and other financial metrics.

COPPER

Table of stock prices for copper. Columns include company names, stock prices, and other financial metrics.

MISCELLANEOUS

Table of stock prices for miscellaneous companies. Columns include company names, stock prices, and other financial metrics.

GOLDS EX-5 PREMIUM

Table of stock prices for gold ex-5 premium. Columns include company names, stock prices, and other financial metrics.

NOTES

Notes section containing various financial notices, including information about interest rates, dividends, and company announcements.

TEAS

Table of stock prices for teas. Columns include company names, stock prices, and other financial metrics.

INDIA AND BANGLADESH

Table of stock prices for India and Bangladesh. Columns include company names, stock prices, and other financial metrics.

SRI LANKA

Table of stock prices for Sri Lanka. Columns include company names, stock prices, and other financial metrics.

AFRICA

Table of stock prices for Africa. Columns include company names, stock prices, and other financial metrics.

MINES

Table of stock prices for mines. Columns include company names, stock prices, and other financial metrics.

CENTRAL RAND

Table of stock prices for Central Rand. Columns include company names, stock prices, and other financial metrics.

EASTERN RAND

Table of stock prices for Eastern Rand. Columns include company names, stock prices, and other financial metrics.

FAR WEST RAND

Table of stock prices for Far West Rand. Columns include company names, stock prices, and other financial metrics.

O.F.S.

Table of stock prices for O.F.S. (Overseas Finance and Securities). Columns include company names, stock prices, and other financial metrics.

FINANCE

Table of stock prices for finance. Columns include company names, stock prices, and other financial metrics.

DIAMOND AND PLATINUM

Table of stock prices for diamond and platinum. Columns include company names, stock prices, and other financial metrics.

CENTRAL AFRICAN

Table of stock prices for Central African. Columns include company names, stock prices, and other financial metrics.

REGIONAL MARKETS

Table of stock prices for regional markets. Columns include company names, stock prices, and other financial metrics.

OPTIONS

Table of stock prices for options. Columns include company names, stock prices, and other financial metrics.

3-month Call Rates

Table of 3-month call rates. Columns include company names, stock prices, and other financial metrics.

RECENT ISSUES AND RIGHTS

Table of recent issues and rights. Columns include company names, stock prices, and other financial metrics.

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